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NEWS SUMMARY

GENERAL BUSINESS

Signs of order emerge in Iran

The first signs have emerged that Ayatollah Khomeini, Iran's religious and political leader, is regaining control. Most of the country's workers have answered his call to return to work after several months of strikes.

But hopes are bleak of oil production returning to its previous level of 6m barrels per day. Khomeini has told oil workers to produce only enough oil for domestic needs—about 700,000 barrels a day.

About 450 Britons were evacuated by the RAF to Cyprus over the weekend. Evacuation of the remaining 5,000 Americans also began under the protection of armed men provided by Khomeini.

Howell pledges snow cash aid

Snow Minister Denis Howell said the Government would pay 75 per cent of any spending above the product of a penny rate to help councils cope with the cost of the emergency.

His promise came yesterday as the AA reported that dozens of main routes in the North, Midlands and East Angles were still blocked. The west of England, however, appeared to have recovered from the bad weather.

Egypt hard line

Egypt says it will make no more concessions to Israel in the peace talks. It is to resume the U.S. at Cairo on Wednesday.

Israeli Foreign Minister Moshe Dayan does not expect the talks to end in agreement permitting the signing of the proposed peace treaty.

Shopfloor plan

TUC General Secretary Len Murray held out the prospect of union conferences to involve the shop floor more closely in national discussions on pay and inflation.

Metro stabbing

A 19-year-old Welsh rugby fan, in France for the Wales-France international, was stabbed in the chest in a Paris underground station.

Fighter fund

Saudi Arabia has agreed to pay \$25m to Egypt to have 50 U.S. F-5 fighters which it was due to begin receiving last October.

Brutto fate

President Zia-ul-Haq, Pakistan's military ruler, said in a U.S. television interview that he would not decide for himself on the fate of former Premier Zulfikar Ali Bhutto, but would let the military and civilian leadership rule on any appeal.

Robbery arrests

A West German Luthansa employee and another man were arrested in New York in connection with a \$5.35m robbery from the airline's cargo terminal at Kennedy International Airport.

Briefly...

Former UK Conservative MP Humphrey Berkeley plans to continue working for the Transkei Government in spite of the attack on him by members of the security police. The bodies of a woman and baby were found beside the River Stour at Dedham, Suffolk. More than 140 firemen braved collapsing walls and floors to fight a blaze which gutted Automotive Products' five-storey factory in Bolton.

Winner of the weekly £75,000 Premium Bond prize is the West Midlands owner of Bond No. 15VX 089653. The £50,000 prize goes to the London owner of Bond No. 13VS 346631.

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Chinese halt push into Vietnam after Russian warning

BY RICHARD NATIONS IN BANGKOK

China has stopped short of pushing deeper into Vietnam on the second day of her border crossing, and there are signs that some elements of the three-pronged invasion force may already be pulling back, military analysts here say.

These developments come as the Soviet Union issued a stern warning to Peking that it would honour its commitments under the Friendship Treaty with Vietnam, and Washington called on China to withdraw her troops.

A flurry of diplomatic activity took place in centres as far apart as the United Nations in New York and Bangkok, to contain the conflict, which has profoundly worried leaders in South-East Asia. Herr Kurt Waldheim the UN Secretary-General, called for a ceasefire last night.

The People's Daily, the Chinese Communist newspaper, suggested yesterday that objectives in Vietnam would be limited, and that Chinese forces would be withdrawn to their normal positions along the frontier with Vietnam as soon as their mission had been accomplished.

Intelligence from the battlefield is still very sketchy, and some analysts do not rule out the possibility that Chinese units may be probing deeper into the interior.

Faced with an overwhelmingly superior force, Hanoi appears so far to have avoided throwing its few remaining regular Army divisions in the north against

the Chinese invasion, leaving its lightly-armed border guards and local militia to take the brunt of the fighting.

Radio Hanoi claimed that its Army and local militia had destroyed 48 Chinese tanks and killed hundreds of Chinese soldiers fighting in Chau Bang and Lang Son Provinces. No one here was able to confirm

The U.S. has warned China, Vietnam and the Soviet Union not to permit the Chinese-Vietnam border conflict to widen into a regional war. The U.S. would like to see the dispute resolved in the UN and not on the battlefield.

China's gamble in Vietnam, Page 14

the details, but it was said that there were two main areas where the Chinese struck.

Peking's military thrust follows its off-repeated promise to "punish" Vietnam, and crowns a year of bitter quarrelling that grew in pace with Vietnam's invasion of neighbouring Cambodia, China's only ally in the region.

When Hanoi's armoured columns seized the Cambodian capital of Phnom Penh early last month with impunity,

Swiss reject stricter nuclear control

By John Wicks in Zurich

THE MARCH of Europe's anti-nuclear lobby received a setback yesterday when Swiss voters firmly rejected a referendum proposal to impose stricter controls on nuclear power stations.

The proposal—which would have amended the Federal constitution and prevented further operation of existing power stations and the building of new ones without Parliamentary approval—was soundly defeated in a majority of Cantons in early results.

The Swiss Government had claimed that approval of the proposal would have made it virtually impossible to increase further the country's electricity production.

The proposal had been the subject of considerable public discussion. A "yes" vote would have meant that Switzerland's four existing nuclear power plants would have had to obtain subsequent parliamentary approval or cease operation.

Encouragement

The government had advised against acceptance of the motion—which had been supported by the Social Democratic Party a member of the governing coalition—as well as by the Independent Party and a number of smaller parties on the extreme Right and Left.

The vote in Switzerland will come as an encouragement to the world's nuclear industry following the decision by Austrian voters virtually to cease nuclear production, the slowing down of the Swedish Government's nuclear programme and significant opposition to the proliferation of nuclear power in West Germany.

Also rejected this weekend was a proposal to ban advertising for tobacco and alcohol. This would have been an absolute ban, with the sole exception possibly of foreign publications "with an insignificant circulation in Switzerland". This would have led to the banning from sale of widely-read magazines and newspapers from abroad and might have proved a contravention of the Helsinki Agreement.

If, as seems certain, the Conservatives retain the two safe seats of Kent and Devon, Continued on Back Page

Demand falls as more prices rise

BY PETER RIDDELL, ECONOMICS CORRESPONDENT

DEMAND IS weakening for products from much of British manufacturing industry, compared with last year. Cost pressures are increasing, resulting in more price rises.

Those are the main conclusions of the Confederation of British Industry's latest monthly trends inquiry, published this morning. It confirms the deterioration in confidence and conditions since last autumn reported by the more extensive quarterly survey at the end of last month.

The latest inquiry, covering 2,049 respondents in manufacturing, was conducted during the first fortnight of February. It reflects attitudes immediately after the lorry drivers' strike.

The number of companies with more than adequate stocks of finished products has increased slightly. That may reflect the decision by many companies to continue producing during the strike although goods could not be distributed. The same pressures may not apply outside manufacturing. Retailers, not covered in the survey, have in some cases seen stocks run down. So an increase in demand for bank lending by some manufacturing companies might be partly offset elsewhere.

Overall, CBI leaders are worried about liquidity and profitability pressures. The disputes appear to have squeezed cash flow and increased costs because of inefficient production and distribution.

The survey says: "The gradual improvement in demand, which occurred through most of last year, has been at least checked in the first two months of 1979."

Lorry dispute

"This pattern of demand is apparent throughout manufacturing industry, although producers of consumer goods continue to experience stronger demand than the intermediate and capital goods sectors, and smaller firms report stronger demand than the larger."

The pattern reflects the continued strength of the export markets for consumer goods, although the weakness of the intermediate sector is the result of long-standing difficulties in metal manufacturing and the severe impact of the lorry drivers' dispute on the chemical industry.

The expected volume of output has recovered somewhat compared with the worst period of last month's strikes although the balance of companies expecting a rising trend of production in the spring is still lower than in the last few months of 1978.

The sharp increase, reported in January, in the proportion

of respondents expecting rising average domestic prices, has been maintained this month. However, the extent of the possible acceleration in price inflation should not be exaggerated, since the proportion of companies in the survey expecting higher prices remains significantly lower than three or four years ago.

That accords with the view of many economists that, in spite of labour cost pressures and present higher food prices caused by the weather and the road haulage dispute, the 12-month rate of retail price inflation should at worst not increase much above 10 to 13 per cent this year, compared with 9.3 per cent at present.

Scottish opinion poll puts Tories level with Labour

BY RICHARD EVANS, LOBBY EDITOR

THE CONSERVATIVES are now running neck and neck with Labour in Scotland and well ahead of the Scottish National Party, according to an opinion poll published today.

The implications of the poll, conducted by Opinion Research Centre for the Scotsman, could be considerable for the Conservatives, not only in the General Election but in the devolution referendum on March 1. In previous surveys Labour has always maintained a clear lead.

Ministers fear that the impressive increase in support for the Conservatives could mean that the Tories, as the major anti-devolution group, could play a more decisive role in the referendum than had been expected. And a No vote, or a clear failure to reach the required Yes target of 40 per cent of the electorate, would cast grave doubts on the Government's ability to survive at Westminster beyond the spring.

Mr. Callaghan's main hope of staying in power to the autumn, as he would probably like to do, soften the memories of the 1974 election, the Tories, as the major anti-devolution group, could play a more decisive role in the referendum than had been expected.

The ORC survey shows that both Labour and Conservatives have the support of 38 per cent of the electorate, followed by the SNP with 19 and the Liberals with 5. In the October 1974 General Election Labour had 38.3 per cent, SNP 30.4 per cent, Tories 24.7 per cent and the Liberals 5.8 per cent.

The continuing slide in the SNP vote means that the Conservatives can expect to recapture four or five of the eight seats the Nationalists won from them in 1974 and there is now every prospect of the Tories capturing some Labour seats as well. It is essential for Labour

Abandoned pit may re-open

BY JOHN LLOYD

APPROVAL for investment of between £10m-£20m in an abandoned Yorkshire colliery is expected shortly.

Thorne Colliery, in the National Coal Board's Doncaster area, was closed in the mid 1950s because of shaft tunnelling and water difficulties.

It is estimated that there are some 140m tonnes of workable reserves in the pit, and that it could quite rapidly be brought to an annual production of 2m tonnes of power-station coal.

An area NCB team has been working on development plans for the pit over the past year, and is convinced that it will be highly profitable.

If approved, the investment will be the second largest undertaken by the NCB since the "Plan for Coal" of 1974 reversed the decline in the industry.

The largest investment approved to date is that for the mining complex at Selby, also in Yorkshire, where estimates of the final cost now run at around £600m.

It is thought that there would be jobs for around 1,500 men at Thorne. Some might be moved from other pits in the area if they are closed.

While there are no collieries in the four Yorkshire NCB areas officially earmarked for closure, a number of pits on the eastern side of the field are beginning to be exhausted.

The Doncaster field is one of the most modern in the country, with almost all of the pits constructed during or just after the 1914-18 war.

A number of the pits, including Thorne, were constructed by German prisoners of war. Thorne, while having rich reserves, proved extremely difficult to work, having constant trouble with the shafts.

Since its closure in 1956 it has been kept on a "care and maintenance" basis by the NCB. Its shafts have served as ventilation for the nearby Hatfield colliery.

Money broker seeks recognition

BY JAMES BARTHOLOMEW

SARABEX, the controversial money broker which in 1977 complained to the European Community about the "closed shop" in London money broking, has applied to the Bank of England to become itself a recognised money broker.

The six banks which have sponsored the application include Bank of America, the biggest bank in the world.

Money brokers are middle-men between dealers—mostly banks—in currency and deposits. In Britain they are not allowed to deal on their own behalf.

Sarabex's application has put the Bank of England on the spot because it is applying under new rules for the regulation of money brokers which came into being in December last year as a result of complaints made by Sarabex itself.

Sarabex, which is London-based with Middle East connections, explained to the European Commission in 1977 that London money broking was a "closed shop". New brokers could not deal in the main currencies without joining the Foreign Brokers' Association, it said.

Sarabex maintained that this was against the Treaty of Rome. The Bank of England opposed Sarabex's case, claiming that the brokers' association was under the Bank's wing and was therefore not in breach of the Treaty.

But the EEC Commission agreed with Sarabex to the extent that it insisted indirect control was not enough. From December 15 last year the Bank itself took over the decisions on who to admit to the money-broking fraternity.

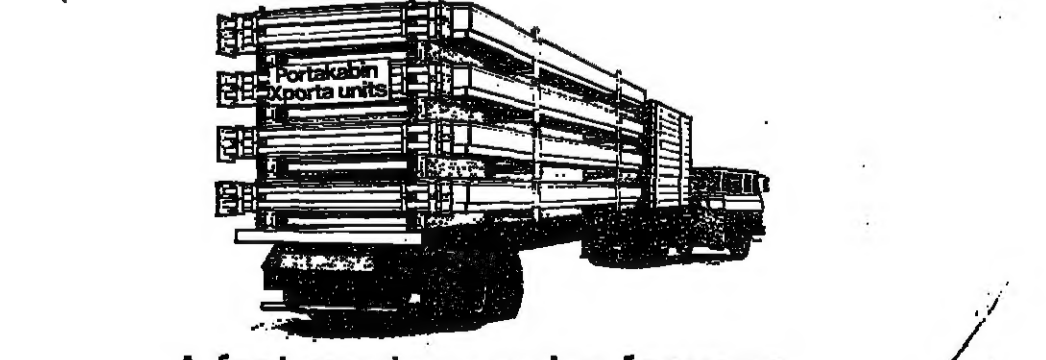
The Bank is now processing Sarabex's application, calling for references from the six sponsoring banks. References on the individual employees have also been requested.

The position is particularly delicate for the Bank because some influential members of the brokers' association are opposed to Sarabex's entry to the market. The Bank is bound to consult with the association before deciding whether or not to admit Sarabex.

Another broker, Longmar, has also applied to become a "recognised money broker" under the new rules.

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WORLD TRADE NEWS

U.S. textile industry backs Carter's Geneva package

BY DAVID BUCHAN IN WASHINGTON

AMERICAN textile companies and unions have agreed to put their weight behind the trade package negotiated by the Carter Administration in the Geneva multilateral talks. This is in return for a programme of export promotion and productivity incentives and of curbs on future import surges, which was announced by the White House at the end of last week.

The bargain thus struck, saves the final stages of the Geneva negotiations from collapse in two important respects. It removes the threat that the textile lobby in Capitol Hill, at the eleventh hour, might again try to bar the Carter Administration from making any concessions to foreign countries in Geneva on U.S. textile tariffs. President Carter last autumn vetoed an attempt by Congress,

spearheaded by representatives from the big-spinning states of North and South Carolina, to do just this. Other countries, notably the European Community, had warned flatly that U.S. failure to bargain on its textile tariffs would jeopardise the Geneva talks.

Equally vital to a successful outcome in Geneva, the deal with the U.S. textile industry clears the way for Congress to waive the administration's obligation to impose counter-vailing duties on subsidised goods entering the U.S. Until Congress extends this waiver, foreign countries have refused to sign a Geneva accord.

The mood in Congress now seems to favour a quick resolution of the waiver saga, which Mr. Charles Vanik, who chairs the House of Representatives trade sub-committee, forecast-

ing that the waiver extension could be ready for a vote by the full House by the end of this coming week.

Mr. Robert Small, president of the American Textile Manufacturers Institute, welcoming the new textile agreement, said that while it would not roll back textile and apparel import levels, it would bring future import growth back into line with that in the domestic market.

Key to the agreement are the provisions to stem future disruptive "surges" in imports. From the 18 countries with which the U.S. already had bilateral agreement under the umbrella of the Multi-Fibre Arrangement. The three most important of these are Hong Kong, Taiwan, and South Korea, accounting for nearly half of U.S. imports.

Dutch banks may back Algerian gas contract

By Charles Batchelor in Amsterdam

PROSPECTS have improved for the signing of a contract for the delivery of 160bn cubic metres of Algerian gas to Holland and West Germany.

A number of Dutch banks will form a consortium to make a proposal, for the financing of the deal, to Sonatrach, the Algerian State oil and gas company.

This follows an announcement by the Dutch export credit insurance company (NCM) that it is prepared to make a "unique" offer to insure the financing of the project. The Dutch have now agreed to extend, for the second time, the deadline given to Sonatrach to complete the deal, until March 31.

In an unprecedented move the privately-owned NCM said it will insure 80 per cent of any loan up to a total of £1250m (\$1250m) and reinsure the risk fully with the Dutch state. The NCM does not normally finance untied credits.

It has however set three conditions. Sonatrach must agree to designate Arzew as the site for the gas liquefaction plant and tanker terminal. West German banks must also be prepared to provide up to £1250m in financing, and finally, Sonatrach must declare that the funding of the project has been satisfactorily completed.

The importance of the Algerian contract for Holland's energy policies has clearly been the major factor in persuading the Finance Ministry to approve the novel insurance plan.

The Dutch hope to sign more contracts to import LNG to supplement the country's own large but declining reserves.

The NCM's offer has persuaded the previously hesitant Dutch banks to reconsider financing part of the project. The three largest banks, Amsterdam-Rotterdam Bank (ABN), Algemeene Bank Nederland and Centrale Rabobank said they were involved in forming a consortium. Gasunie, the national gas distribution company, said the outlook for the project is now more positive.

World shipbuilding orders fall 34%

BY IAN HARGREAVES, SHIPPING CORRESPONDENT

THERE WAS a 34 per cent drop in the volume of shipbuilding orders placed last year, compared with 1977, and the established shipbuilding nations continued to lose market share to the growing yards of the developing world.

According to the latest annual of statistics from Fairplay. International, orders placed last year slumped to 915 ships totalling 13.7m deadweight tons, against 20.8m dwt in 1977.

This was in spite of a further proliferation during the year of government subsidy schemes for shipbuilders, which enabled them to lower prices and extend credit terms to customers.

The report says the height of this bidding for orders was reached with a set of tenders for six 16,500 dwt cargo ships for Pakistan. Japan won the order, with a bid based on 100 per cent credit spread over 30 years with no payments in the first 10 years and a 3 per cent rate of interest thereafter.

In spite of Japan's keen attack on the developing country market in the closing months of last year, the world's biggest shipbuilders lost market share last year, taking orders for 308 ships off 5.5m dwt—a 40.5 per cent share of the total, compared with 47 per cent a year earlier. This reflects Japanese shipbuilders' problems with the appreciating yen.

A number of other leading

shipbuilders also lost ground, including Holland, UK, Norway, and Spain, with shares of 1.8, 2.3, 0.7, and 2.9 per cent respectively, measured by deadweight tonnage.

Brazil (1.8 per cent), South Korea (5.8), Poland (5.9), Sweden (7.8), and Taiwan (3.1) all improved their shares.

The trend towards the new

Because Fairplay's figures are measured in deadweight tons, shipbuilders specialising in more sophisticated but smaller craft tend to show up badly.

Last year, the scale of ordering for some of these specialist ships, notably container vessels, increased against the general trend. Fairplay records 124

tanker orders, which fell from 5.6m dwt to 4.8m dwt. Bulk carrier orders fell very sharply, from 5.8m dwt in 1977 to 2.3m dwt last year.

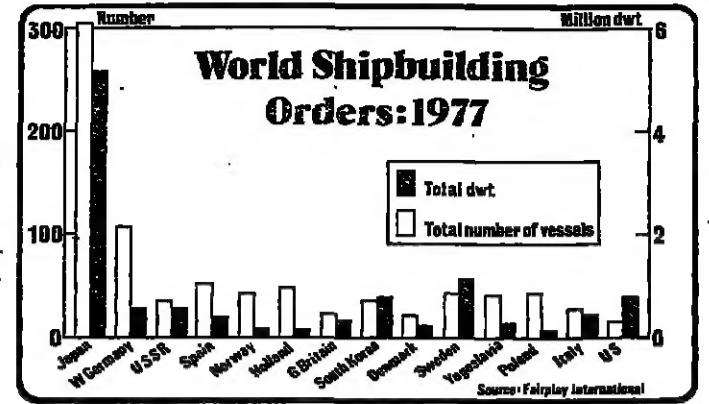
Last year was also one in which Greek owners drew back from the new building market, after suffering escalating prices on existing yen-based contracts placed in Japan.

Only 13 ships were ordered by Greek owners last year, compared with 85 the year before.

Japanese interests remained much the biggest purchasers, ordering 154 ships of 2.4m dwt. U.S. owners came next, stimulated by the release of Federal subsidies, with 62 orders totalling 1.8m dwt. Hong Kong owners, who represent a rapidly growing force in the industry, were third in terms of tonnage, with 29 ships of 1.2m dwt.

Encouraged by the shipyard's bargain offers, a number of developing countries sought to expand their fleets and the list of countries whose rate of ship ordering increased last year, makes interesting reading. China, the U.S., Brazil, Indonesia, Pakistan, Australia, Turkey, Japan, Italy, Romania, East Germany, Finland, Malaysia and Iran.

The Newbuilding Market 1978, Fairplay International Records and Statistics, Minister House, Arthur St, London EC2H 8JH. UK, \$50, Europe, \$80 outside Europe. The 1978 Fairplay World Shipping Yearbook (128), our publication, is available from the same address.



Wheat deal failure played down

BY BRIJ KHANDARIA IN GENEVA

THE FAILURE of the wheat conference has produced a sudden change of tone in some Western delegations here who are now trying to play down the importance of cereals as part of the Tokyo Round trade package.

Delegates point out that wheat was always kept separate from the Tokyo Round although it was formally listed as an item in the agricultural sector. Failure to conclude a new wheat arrangement to replace the 1971 accord, which was extended here on Wednesday, is now being presented as something regrettable but not harmful to the Tokyo Round.

Earlier in the trade talks the United States repeatedly said that a package without wheat

was difficult to conceive. The Common Market fought a long and hard battle with the U.S. to obtain inclusion of a separate accord on "secondary grains" alongside the planned wheat accord, but the wheat conference failure has also meant that their will be nothing in the overall Tokyo Round package on such grains.

Nor will there be a food aid convention immediately to ensure food security and sufficient grain supplies for developing nations that might experience food shortages.

However, a separate series of negotiations is likely on food aid later in the year and Mr. Dale Hathaway, U.S. Assistant Secretary of State for Agricul-

ture, indicated here that his Government would be willing to offer bigger quantities to poorer nations. But now it is an open question whether there will be a new food aid convention.

Mr. Hathaway said, however, that the U.S. would be ready to contribute an amount equal to total contributions made into any food aid reserve stocks by other nations, up to a ceiling of about 5m tonnes out of a total of 10m tonnes.

Although developing nations import about 22m tonnes of wheat annually, for the poorest among them the availability of adequate food aid stocks is more important than having an international wheat arrangement.

New cheap U.S. flights

TRANS INTERNATIONAL, a U.S.-based airline, plans to introduce cheap once-weekly flights between Frankfurt and New York this summer, at rates as much as 50 per cent below existing fares.

Fares on the Frankfurt to New York route will be DM 489 (£136) single in the off-peak season and DM 599 in the peak.

World Economic Indicators

	INDUSTRIAL PRODUCTION				% Change over previous year	Index base 1975=100
	Dec. 78	Nov. 78	Oct. 78	Dec. 77		
U.K.	111.3	109.4	108.9	104.3	-4.7	1975=100
U.S.	150.4	149.5	148.5	139.4	-7.7	1967=100
West Germany	124.3	120.7	124.6	115.2	-7.9	1970=100
Italy	118.4	117.9	114.6	113.5	-4.5	1970=100
France	132.0	130.0	129.8	123.0	-7.3	1970=100
Holland	120.9	122.0	121.0	116.0	+3.4	1970=100
Belgium	125.5	125.2	124.4	119.6	+4.9	1970=100
Japan	125.3	124.1	124.4	117.3	+6.8	1975=100

Rockware - leading the way home with Widemouth

For the first time since the advent of the ring-pull can over ten years ago, a major packaging innovation for beers and soft drinks is now in retail distribution.



The Widemouth bottle from Rockware Glass is being adopted increasingly by both brewers and soft drinks manufacturers as a strong alternative to the can.

Rockware developed this container in the knowledge that research confirmed glass as being traditionally preferred by beer drinkers. Also confident that soft drinks sales could only benefit from

being packed in a Widemouth convenience container.

Hence the Widemouth, with its ring-pull closure, plain lip for drinking, lightness and modern image—a host of advantages for consumer and packer alike. Added to these quality features are opportunities for faster filling speeds with resulting unit cost savings.

Rockware's new Widemouth has already had significant impact on the packaging market. The beer bottle, for example, has collected impressive packaging awards against severe competition.

Widemouth is available in a variety of sizes for both beers and soft drinks. For further information, comprehensive technical advice and installation expertise, call Rockware—our revolution in packaging for the 1980's is here.

ROCKWARE
package appeal

Rockware Glass Limited, Riverside House, Riverside Way, Northampton NN1 5DW Telephone 0604-21255. Telex 311473.



Lloyds Bank Group Results 1978

Group profit before tax was £182m

This is a 9.6% increase over the figure for 1977, but because of inflation is worth little more in real terms. International activities produced much the same profit; UK earnings benefited from good growth in current account balances and lending.

Out of this, tax takes £59m

Changes in accounting for deferred taxation have reduced this.

and proposed dividends take £17m

The maximum permitted, this is a small increase in real terms, the first for six years.

so profit retained is £106m

This contributes to shareholders' funds now amounting to £1,034m and helps to support world-wide operations and a balance sheet totalling £14,750 million.



Lloyds Bank Group

Rights Offering

The Bank of Nova Scotia Offering of 5,156,250 Additional Shares (par value \$1 per share)

The Bank of Nova Scotia is offering to its shareholders of record on February 7, 1979, the right to subscribe for additional capital stock on the basis of one new share for each eight shares held. Transferable subscription warrants have been mailed or delivered to shareholders. Rights may be bought or sold on most Canadian and United Kingdom stock exchanges.

Subscription Price: \$21.75 per Share

The rights expire at the close of business on March 15, 1979

For full particulars, reference should be made to the formal offer from the Bank to its shareholders dated February 12, 1979. In addition, an information circular has been prepared. Copies of the above and assistance regarding this offer may be obtained from any of the undersigned.

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Nesbitt Thomson Securities Limited
Midland Doherty Limited
Scotia Bond Company Limited
A. E. Osler, Wills, Bickle Limited
Geoffrion, Robert & Gélinas Ltd.
Mead & Co. Limited
Odium Brown & T. B. Read Ltd.
Casgrain & Company Limited
Winslow & Winslow Limited
MacDougall, MacDougall & MacTier Ltd.
Tassé & Associés, Limitée
S. G. Warburg & Co. Limited

UK NEWS

Europe's MPs are warned against 'power grabbing'

BY REGINALD DALE

THE directly elected European Parliament should adopt a pragmatic, cautious attitude to its work and not seek to grab power by openly clashing with the EEC's other institutions.

This "realistic" if low-pitched approach is recommended by Mr. Christopher Tugendhat, European Commissioner for the Budget, in a pamphlet published today by the Conservative Political Centre. He admits that to some, such a programme may seem "uninspiring".

After the first direct elections in June the new members of the European Parliament should seek to complement rather than emulate national Parliaments in their pursuit of influence over EEC decisions, Mr. Tugendhat warns.

The key to success for the directly-elected Parliament is to be found in developing democratic control in areas where it does not already exist, he argues. This means "finding new fields to conquer rather than seeking to camp out on someone else's already well-cultivated front garden."

The Community's Treaties already clearly set out the legal basis of the relationship between the main institutions, and, unless it is prepared to mount a challenge to the member states, the Parliament must work within this framework, Mr. Tugendhat says.

"If the directly-elected MPs yield to temptation to set their sights upon acquiring power, in relation to the Community's other institutions, analogous to the powers enjoyed by national Parliaments in relation to national Governments, they

would not only be pursuing an entirely inappropriate path but also one likely to be extremely damaging to the European Parliament's prospects of increasing its influence.

"It would be bound to lead to a major constitutional collision with the Council of Ministers in which the Parliament would be certain to sustain the severest injuries."

The Conservative Party's strong commitment to the EEC is stressed in the party's initial campaign guide for direct elections also published in London today.

Conservatives in Europe, Christopher Tugendhat, Conservative Political Centre, 32 Smith Square, SW1P 3HH; price 60p.

Campaign Guide for Europe 1979, Conservative Central Office, 32, Smith Square; £2.75.

Household insurance likely to rise 25%

BY ERIC SHORT

A 25 per cent increase in premium income for British insurance companies on household accounts this year is forecast by stockbrokers Wood Mackenzie in its latest review of composite insurance companies.

It points out that the household account has been the most troublesome for composite companies in recent years, resulting in large losses for those involved. Two factors have affected this class of business: abnormally high weather losses and a rising number of claims in particular for thefts. Insurance company crime losses, the review states, have risen from £23m in 1973 to £84m in 1977.

The problems have been aggravated by policyholders not raising their insurance to take account of rising values, in money terms, of both houses and their contents. This has resulted in claims costs rising faster than premium income.

The review describes measures taken by the insurance companies to overcome these problems and restore profitability to the

householder accounts. The companies have endeavoured to lift the sums insured to the correct level by index linking. They are now imposing severe penalties on those policyholders who do not keep sums insured up-to-date.

Finally, the companies have increased the premium rate on contents to cover the rising number of claims—the latest leading composite company to take such action being Royal Insurance.

Wood Mackenzie expects these various measures to improve premium income of composites in 1979 by 25 per cent, and considers that this rise should alleviate the more urgent problems on the household accounts.

But over the longer term, it considers that further corrective action will need to be taken, such as increasing the premium rates on buildings and making policyholders pay a higher proportion of any claim. Such action is likely to be necessary because weather losses are becoming increasingly frequent and subsidence claims will in future be a regular feature.

Britain worse off but the slide can be halted

BY PETER RIDDELL, ECONOMICS CORRESPONDENT

BRITAIN'S economic position has deteriorated in the last three months but is still containable provided the political circumstances do not inhibit the Government's apparent desire to limit public sector borrowing, according to Mr. Terry Burns of the London Business School.

Writing in the *ISIS Bulletin*, published by City stockbrokers Laurie Millbank and Company, Mr. Burns argues that as long as the trade balance is in surplus the UK should avoid any runaway inflation, although the price of a strong pound will be profits weakness.

Mr. Burns' restrained pessimism, or perhaps cautious optimism, is similar to the view held by many influential City and academic economists. Although the rate of increase in earnings in the current round looks like being higher than assumed last autumn, and the

bad weather and lorry drivers' strike are temporarily boosting prices, the rate of price inflation should not accelerate this year back to the levels of the mid-1970s.

On this view, provided sterling remains stable, the 12-month rate should at worst not move much above the 10 to 13 per cent range.

Mr. Burns argues that "it is possible to be hopeful even if the growth of earnings is between 12 and 15 per cent. With sterling remaining strong and the balance of payments in surplus the increase in the inflation rate is likely to be limited otherwise a major loss of competitiveness would ensue."

"This will limit the monetary squeeze on the personal sector although company profitability will suffer. Output growth, excluding North Sea oil, would be modest, but there would be no major recession and some recovery might emerge in 1980."

Certificate lifts National Savings

BY TIM DICKSON

BIG FLOWS into the new 18th certificate boosted net National Savings receipts to £161.7m in the four weeks to February 2.

The total more than doubles December's £75.7m, although the savings market traditionally slumps during that period.

The main impetus last month came from the high yielding 18th certificate launched at the end of January. In its first five days, the new issue attracted £61m, leaving a net intake for issues apart from the retirement issue of more than £65m.

Both the National Savings Ordinary and Investment accounts had their best month for a year. An important factor was the increase by 2½ points to 12 per cent at the start of the month in the interest paid on investment accounts.

The net inflow of £22.4m into the investment account in fact has helped stem previous net withdrawals, which in the first 44 weeks of the financial year 1978-79 amounted to £405m.

Total remaining funds administered by the Department of National Savings now amounts to more than £11bn, compared with £9.8bn a year ago.

The City stockbrokers James Capel believes that the year-on-year inflation rate will be at least 13 per cent by the last quarter of the year.

A deflationary Budget of £1.75bn would be required to reduce the public-sector borrowing requirement to a level consistent with the forecast £8.5bn and continued monetary restraint.

Decision soon on Tarling appeal

By Tim Dickson

MR. RICHARD TARLING, the former chairman of Haw Par Brothers International who faces extradition to Singapore, is expected to hear in the next few days the outcome of his appeal to the Home Secretary.

Representations were made last week by Mr. Tarling and his counsel, Mr. Louis Blom-Cooper, QC.

Mr. Tarling, who was once a business colleague of Mr. Jim Slater, faces extradition on five company law charges relating to the 1972 and 1973 accounts of Haw Par.

This month the Lords' Appeal Committee refused him leave to challenge a ruling by the Queen's Bench Divisional Court that it would be neither "unjust" nor "oppressive" to require him to return to Singapore to face the charges.

At the time Mr. Tarling's counsel argued against extradition on account of the lapse of time since the alleged offences, and because the charges were "trivial," and did not involve dishonesty.

Irish party seeks closer Ulster ties

A POLICY document urging a close political alliance between Ulster and the Republic was published today by Fine Gael, the republic's main opposition party. The proposals were announced simultaneously in Dublin, Belfast and London.

The plan follows a year-long study instigated by Dr. Garrett FitzGerald, the party's leader and former Irish Foreign Affairs Minister.

The results of similar examinations undertaken by the Irish Government party Fianna Fáil and the Irish Labour Party will be announced shortly.

Dr. FitzGerald stressed that the Fine Gael proposals were not "an attempt to sketch out a blueprint for a united Ireland."

He added that Fine Gael did not expect the plan to change the political situation in Northern Ireland overnight.

The document urges a close political alliance, perhaps a federal North-South system, between the two parts of Ireland.

Among the proposals is the possibility of a police force which could operate freely throughout Ireland.

Bid to improve shop efficiency
By Our Consumer Affairs Correspondent
A PROJECT to improve labour efficiency in the retail trade has been launched by the National Economic Development Office in conjunction with the industry's training board.

The project, which is expected to take 15 months to complete, will use case-studies to show how greater efficiency can be achieved, leading to more pay for employees and better store performance.

Slower growth is forecast

BY DAVID FREUD

BOTH long- and short-term interest rates now look extremely high in real terms, and this is likely to cause significantly slower economic growth this year.

The City stockbrokers Montagu Loeb Stanley says there must be a sustained reduction by either the public or private sector if rates are to fall.

In its economic circular the firm states that though it views the prospects for the public-sector borrowing requirement with more confidence than some other commentators, it is unlikely that maintenance of the requirement at £8.5bn will allow a sharp fall in rates.

The reduction in loan demand will therefore have to come from the private sector, and is likely to be the result of slower growth in gross domestic product.

"We would therefore be surprised to see the current high level of short-term interest rates persist beyond the summer months, and reductions in minimum lending rate should occur at that time."

In summary, the firm forecasts that average earnings are unlikely to rise by more than 15 per cent in 1979, and that at worst price inflation will reach only 12 per cent.

It believes economic recession is probable, and that GDP growth will not exceed 2 per cent in 1979. The public-sector borrowing requirement is not

expected to rise above £8.5bn in the 1978-79 fiscal year, and the Government will probably achieve its £8.5bn target.

The City stockbrokers James Capel believes that the year-on-year inflation rate will be at least 13 per cent by the last quarter of the year.

A deflationary Budget of £1.75bn would be required to reduce the public-sector borrowing requirement to a level consistent with the forecast £8.5bn and continued monetary restraint.

Such fiscal measures, the result of a 15 per cent rise in average earnings, will exacerbate the slowing in output and demand in the second half of the year and add to inflation, says the firm.

UK NEWS

Problems for Hemerdon may be solved soon

BY PAUL CHEESERIGHT

THE LEGAL tangles surrounding the ownership of Hemerdon Mining and Smelting which is involved in what could be the biggest UK metal mining project of this century, are close to being unknotted and may be settled in the Supreme Court of Bermuda next month.

The company is in a joint venture with Amey Exploration of the U.S. to decide whether a tungsten-tin-china-clay deposit at Hemerdon Ball, outside Plymouth, can be exploited. It was originally set up by Mr. W. A. Richardson, who raised money for it largely in Canada and the U.S.

No shares of the \$m in issue have ever been allotted. They are held in trust by a bank in Bermuda, where the company is registered, by order of the Supreme Court. Legal problems have arisen about the rightful ownership of the shares.

"We are getting closer to reaching an understanding with Mr. Richardson, that he will assist and co-operate with the trustee rather than delay and frustrate," Mr. Uwe Manski of Dunwoody of Toronto said at the weekend.

Dunwoody has been appointed trustee for the grubstakers — those who financially supported Mr. Richardson — by the court.

Mr. Richardson, whose executive control of Hemerdon ceased in December 1976, claims 1m shares. The problems faced by Dunwoody in its negotiations with him centre on the fact that 1,600 grubstakers claim a right to a total of a further 9m shares. Thus there are claims to

double the amount of shares in issue. Records of share promises in the 1960s and early 1970s held by Dunwoody tally to some degree with records held by Mr. Richardson, but difficulties have arisen about those who have been offered shares in payment for services given to Mr. Richardson.

It seems likely that Dunwoody will be able to go back to the Supreme Court in Bermuda next month with a partial list of potential shareholders agreed with Mr. Richardson and the present Hemerdon management but that the court itself will have to rule on contested claims, including that of Mr. Richardson.

If the issue of share ownership is settled the company can press ahead with plans for over-the-counter trading of its shares in the U.S. This will open the way to raising new finance if there should be a decision to exploit Hemerdon Ball.

The company's immediate financial problems over investigation of the deposit were eliminated when its joint venture agreement was signed with Amay, which is shouldering the costs of drilling, metallurgical testing and economic feasibility studies.

Any decision on mine development in the early 1980s would involve Hemerdon in finding funds for capital investment, if it is to maintain a 50 per cent interest in the project.

Planners agree CBI's Centre Point plan

By John Elliott, Industrial Editor

THE Confederation of British Industry has cleared one of its hurdles it was facing in its attempt to take over London's Centre Point office block as its headquarters.

The planning committee of Camden Council approved the CBI's application to convert the block's showrooms into a council chamber. Without this approval, which has to be ratified by the full council, the CBI would have abandoned its interest.

It is, however, still not certain that the CBI will occupy Centre Point, which has been virtually empty since it was built in 1965. This is because publicity given in December to the CBI's interest has led to other buildings being brought to its notice.

The developers of a building in the Vauxhall Bridge Road, also a possible future home for the CBI for many years, are believed to be considering new initiatives.

Nevertheless, Centre Point remains the front runner. Providing no snags emerge, the CBI will now have to decide whether it considers it is worth spending some £2.5m on converting the bottom half of the 30-storey office block to its needs.

By joining a bigger group Yuki,

Yuki weaves link with Rivington Reed

BY RHYS DAVID, TEXTILES CORRESPONDENT

YUKI, the Japanese fashion designer based in London, is getting together with Rivington Reed, the Lancashire textile group headed by Dr. John Blackburn, in a link-up which could have an impact on British fashion fabrics.

The move, which is certain to cause considerable interest in the textile industry, goes beyond the conventional licensing agreement under which designers produce ranges which are then marketed under their name.

Rivington Reed is acquiring a controlling interest in a new company, Yuki, which becomes an associate company publishing all Yuki designs.

The arrangement is something of a coup for Dr. Blackburn, who has developed a reputation in the textile industry for his marketing skills. Before joining Wm. Reed, as it was two years ago, he held senior board positions with Vantona and previously with Carrington Virella, where he was one of the pioneers of the colour and design revolution which has overtaken household textiles such as sheets.

The deal will therefore unite marketing and design skills, and if it proves successful it could bring considerable advantages to both sides, and indeed to the UK textile trade balance.

By joining a bigger group Yuki,

which includes Barbra Streisand and Margaret Thatcher among its clients, will obtain organisational and financial backing to develop further its existing design business.

It could therefore advance from being an admired concern in the world of high fashion to a position alongside the household names of textile design such as Mary Quant and Hardy Amies.

The intention is that Yuki, who would himself act as managing director with Dr. Blackburn as chairman, should operate in three main areas. They are haute couture, where Yuki has established a reputation for

lavish use of very fine denier women's wear fabrics; ready-to-wear, an area where Rivington Reed believes it can help Yuki expand; and other non-apparel areas, where it is hoped to build up new business.

Dr. Blackburn said yesterday that Yuki would remain an independent company, free to enter into licensing agreements with other companies, although with some limitations if there was a conflict with work being done for Rivington Reed.

Besides giving Yuki the chance to develop into new fields, the arrangement provides a firm indication of Dr. Blackburn's own ambitions for his

group. When he arrived, much of its business was tied up with the declining men's suit trade, as one of the leading suppliers of woven flannel fabric linings to the big made-to-measure groups. Dr. Blackburn took the carpet industry by surprise soon after arriving by acquiring from the Receiver the Rivington subsidiary of Bond Worth and he has since moved further into the carpet industry despite the problems of over-capacity, with further acquisitions in Ireland and the UK.

The link with Yuki is meant primarily to fit in with moves Rivington Reed has been making to involve itself more

deeply in fashion fabrics, in particular the more expensive ranges which UK garment makers are having to buy from the Continent.

The group has moved into the manufacture of velvets through Dendle Fabrics and is using its expertise in the lining field to expand into manufacture of very fine woven textured polyester, a fabric now in strong demand. Dr. Blackburn said he was happy that Yuki, who is now British, but was trained as a textile engineer in the U.S. and Japan, would be bringing out ranges soon in Rivington Reed's velvet and in woven textured polyester.

Loans spur machine tool growth

BY HAZEL DUFFY, INDUSTRIAL CORRESPONDENT

THE FINAL tally of aid offered by the Government to the machine tool industry is £35.8m. Investment by the industry is expected to have increased substantially as a result of the scheme.

If all the projects on which aid has been offered were to materialise, the total investment by the industry with the help of Government will be nearly £176m. In practice, some projects are expected to be dropped

or scaled down. But the Department of Industry is still budgeting for about £32m of aid to be taken up, against an allocation by Government of £30m.

Success

Alfred Herbert will be the biggest beneficiary from the scheme, with more than £4m aid offered. Other companies receiving substantial amounts include Wickman (part of the

John Brown group), the 600 Group, and Adcock-Shipley.

The Department received 438 applications from the industry, of which 123 were rejected or were withdrawn by the companies.

The scheme, considered to be one of the most successful for aid to industry, was designed to promote investment in buildings, machinery and product development.

Companies seeking to rationalise

production, or wanting the services of consultants, were also eligible.

In practice, plant and machinery and product development have proved the most attractive aspects of the scheme. Assistance towards investing in new machinery will total nearly £18m, resulting in investment of more than £91m, while some £14m has been offered towards product development projects totalling £58m.

Verdict tomorrow on two Clydeside plants

BY LISA WOOD

THE FATE of Marathon Shipbuilding, of Clydebank, and Goodyear Tyres, of Drumchapel, both U.S.-owned, will probably be decided tomorrow. Both plants risk closure with the loss of nearly 2,200 jobs.

Mr. Bruce Millan, Scottish Secretary, is to meet Mr. Gene Woodfin, chairman of Marathon Construction, of the U.S., tomorrow in an attempt to reverse the company's rejection of a Government order for an oil-drilling rig from the Clydebank yard.

Goodyear's management is simultaneously to make a statement on the future of its Scottish tyre plant.

More than 500 Goodyear workers rejected a management scheme to cut losses by revising working practices. The management had threatened closure if they rejected the plan. Redundancies would have been limited to 57 in the company's proposals.

The British National Oil

Corporation has been negotiating with Marathon on behalf of a state consortium including British Gas and the Scottish Office. It refused to pay more than £11m for a rig, but the company is believed to want £500,000 more.

Marathon employs 1,100 workers and has only a few weeks' work left.

Mr. Millan wants the Marathon yard to remain open, but is unlikely to be able to increase the offer because of Treasury opposition and the danger of infringing international agreements on the level of state aid to commercial manufacturers.

Mr. Jimmy Reid, outfitting convener at Marathon, said last week that it was scandalous that negotiations had been broken off over such a paltry sum.

The workforce has offered to increase productivity to cover the price gap between the Corporation's offer and what Marathon is prepared to accept.

Lamb imports put into store as price drops

FINANCIAL TIMES REPORTER

NEW ZEALAND is to reduce supplies of lamb available in Britain by putting large quantities into store, in an attempt to stop prices falling.

The lorry drivers' strike in January has resulted in large supplies of New Zealand lamb building up just at a time when new-season shipments start coming in. The prospect of an influx of supplies has pushed prices down sharply and already lowered the return to New Zealand farmers.

A spokesman for the New Zealand Meat Producers Board in London confirmed yesterday that meat exporters in New Zealand had been asked to arrange for an extra quantity of lamb shipments to be put into store in Britain.

He said that talks were going on with the meat trade in Britain on ways to stabilise the decline in prices.

It is reckoned that about 10,000 tonnes of New Zealand lamb may be put into storage out of the 25 to 30,000 tonnes shipped to the UK this month. New Zealand is understood to fear that if its lamb prices fall too low in Britain there may be

repercussions from continental members of the European Community.

Mirror shelves Glasgow plans

By Ray Ferman, Scottish Correspondent

MIRROR GROUP, the Reed International publishing subsidiary, has shelved plans to start a new evening newspaper in Glasgow.

Preparations were well advanced. The title, PM, had provisionally been chosen and dummy editions had been printed.

But Mirror and Reed executives have decided that the project should be put off at least until the autumn.

Mirror Group already publishes successful morning and Sunday newspapers from Glasgow. The city's only evening paper is the Evening Times, published by George Outram, a subsidiary of Scottish and Universal Investments.

Coopers and Lybrand to probe Channel plans

BY LYNTON MCLAIN

THE EUROPEAN Commission has awarded Coopers and Lybrand Associates a contract to study proposals for a road and rail link between Britain and France.

A variety of proposals will be examined, including the British Rail plan for a £650m single bore rail tunnel under the Channel.

Other proposals expected to be studied include a combined road rail tunnel which would surface

at suitable points near sand banks. Bridges will also be studied, but the company will be concerned more with revising earlier traffic flow estimates, than with engineering cost evaluations.

The study is to be undertaken to illustrate an EEC Commission study, part of which is also being carried out by the company, on how best to measure the benefits to the Community of major infrastructure projects.

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UK NEWS — LABOUR

Hospital and council staff may have similar deals

BY NICK GARNETT, LABOUR STAFF

A PAY OFFER similar to that which may be reached for local authority manual workers in the next few days is now seen by national union officials as a way out of both the hospital ancillary and ambulance men's disputes.

Council employers and union representatives meet Mr. Peter Shore, the Environment Secretary tonight to discuss a self-financing productivity deal to give a modest topping-up above the 9 per cent offer on Friday.

Both sides meet again, possibly on Wednesday, for further discussions on productivity if today's meeting makes reasonable headway.

A large number of employers are doubtful if a productivity deal could be accurately gauged in terms of self-funding, but the unions believe a self-financing deal based on increased flexibility and improved efficiency can be devised immediately in double figures.

The local authority manuals have also been offered a pay comparability study which holds

out the possibility of more money in August and in the following April.

Union leaders are prepared to recommend the 9 per cent provided agreement is reached on productivity. If it is not reached, the offer is still likely to go out to the membership, but with no recommendation.

The Government proposes that the Standing Commission which would make a comparability study of local authority pay would be used for other public services.

National union officials involved in the health service dispute have already been told privately that they will also be offered 9 per cent.

If a productivity deal can be worked out for these groups, with the promise of a comparability study, the 9 per cent offer would almost certainly be recommended for acceptance.

It is unclear if that recommendation would be accepted by health service workers. A national conference of ambulance men's shop stewards,

at which there may be some indication on this point, meets tomorrow.

Further pay talks in the health service are expected within the next week.

A national conference of Transport and General Workers' Union delegates representing water industry workers at the weekend accepted a deal worth 16 per cent.

This follows a similar decision by members of the General and Municipal Workers' Union. The decision by members of the National Union of Public Employees will be known next Monday.

Mr. Frank Chapple, general secretary of the Electrical and Plumbing Trades Union, said yesterday that the activities of some pickets involved in the local authority dispute were no better than those of terrorists.

Paying particular groups of workers sizeable increases simply because they received so little would be disastrous for the country, he said.

Railway drivers' threat lifted

By Our Labour Staff

TRAIN DRIVERS in two of Southern Region's three divisions yesterday called off their unofficial one-day strike on Wednesday which would have affected London's Underground services.

The decision to postpone any unofficial action until after March 18 was taken by local officials of ASLEF, the train drivers' union, representing depots in the south-eastern and central divisions.

Leaders of drivers in the south-western division, covering services to and from Waterloo meet today to vote.

Mr. Ray Buckton, the union's general secretary, last week appealed to the men to suspend industrial action while an independent tribunal prepared its report on a national drivers' claim for a 10 per cent special responsibility payment.

Some union and British Rail officials are doubtful that the tribunal, whose hearing has now ended, can find a solution acceptable to all sides could be based.

Bid to prevent Dunlop closure

By Our Labour Staff

PROPOSALS to prevent the closure of Dunlop's Speke plant on Merseyside are likely to be drawn up today at a special union conference.

It will involve Mr. John Miller, Transport and General Workers' Union national secretary and national and local representatives of all unions at Dunlop. The idea is to resist threatened redundancies at two of the company's other plants. Last week Mr. Miller and Mr. Moss Evans, the Transport Workers' general secretary, met Mr. John Smith, Secretary for Trade, about the problems caused by cheap European tyre imports.

Dunlop has blamed cheap imports and low productivity for the Speke closure, involving the loss of about 2,400 jobs.

Dunlop plans cuts at its Birmingham and Scottish plants with the loss of a further 750 jobs.

Civil Service pay unit findings to aid industrial worker's deal

BY PHILIP BASSETT, LABOUR STAFF

INDUSTRIAL civil servants, who caused political embarrassment in their pay campaign last year by blacking three of Britain's four nuclear submarines, will base negotiations for their July settlement on pay comparisons made by the white-collar Civil Service's pay research unit.

A settlement due in April for the 600,000 white-collar civil servants will be based on the unit's findings, which show rises due of 26.36 per cent for middle-ranking grades. Progress is being examined by union officials representing the 182,000 industrial workers.

Full results of a separate survey for the industrial workers are expected about May, but union officials are confident that comparisons with outside industry must show rises due of between 15 and 30 per cent.

Officials representing white and blue-collar civil servants have been regularly meeting jointly to chart the progress of the white-collar personnel's fight to win full implementation of

the unit's findings, in spite of the Government's 5 per cent limit.

Industrial workers regard the outcome of the white-collar negotiations, including the offer of a staged deal, as crucial to their settlement. The promise of a comparability settlement for this year's deal was central to last year's Government's agreement with the unions on a 10 per cent deal to prevent repetition of embarrassing industrial action.

Last year, action included one-day strikes at naval dockyards and stoppages by House of Commons and Whitehall drivers, messengers and other staff. The submarine's blacking had to be broken by the Navy.

The Civil Service Department has provided the pay research unit with extra resources to deal with the industrial workers' comparability study.

The unit is drawing up its report on an agreed list of companies after visiting comparable jobs in oil and chemical engineering, ship-

building, marine engineering, construction, transport and distribution.

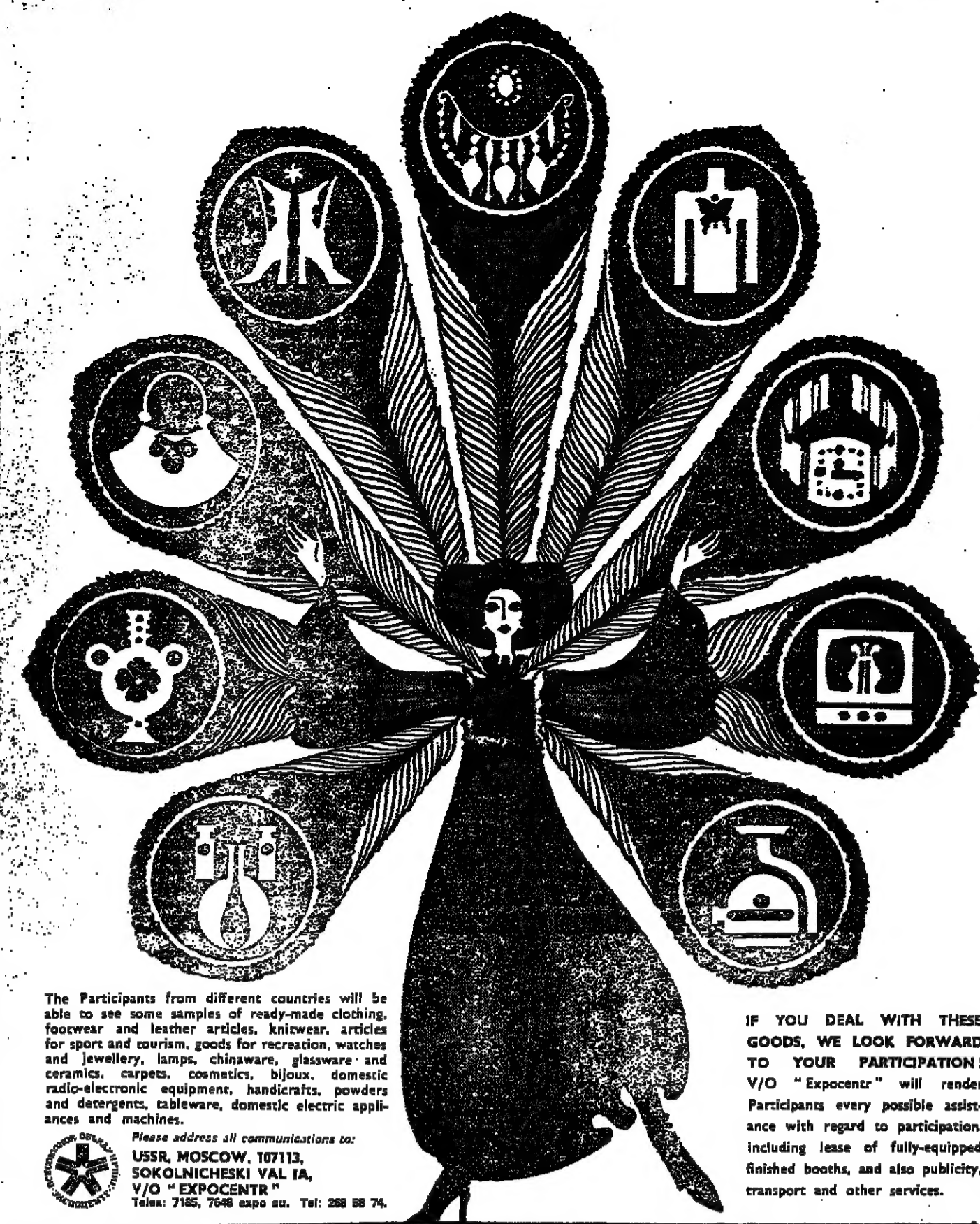
It is examining basic rates, overtime, holiday, shift and sick pay, productivity payments and the conditions to be met for productivity schemes, piecework, measured day work and other factors.

Journalists told to quit rented flats

JOURNALISTS SACKED by the Nottingham Evening Post have been told to quit their rented homes within 28 days.

The Post sacked 28 National Union of Journalists members for taking part in the recent provincial journalists' strike and six of them live in flats rented from the company.

The ultimatum came in solicitors' letters on behalf of T. Bailey Foreman, owners of the Post.



The Participants from different countries will be able to see some samples of ready-made clothing, footwear and leather articles, knitwear, articles for sport and tourism, goods for recreation, watches and jewellery, lamps, chinaware, glassware and ceramics, carpets, cosmetics, bijoux, domestic radio-electronic equipment, handicrafts, powders and detergents, tableware, domestic electric appliances and machines.

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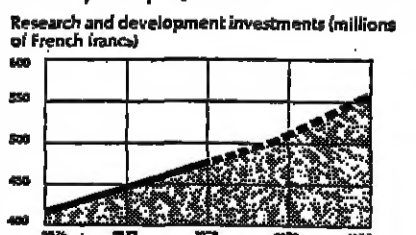
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We are, as J.P. Brulé, Chairman of Cii Honeywell Bull, recently said, "data

processing systems architects." This is as true for hardware/software optimization as for the design and implementation of teleprocessing systems. Our expertise in this extremely advanced field is proven. We have, for example, built the Swedish Social Security Administration's network, and that of the French assurance group, Mutuelle d'Assurance Artisanale de France, and the networks of many European banks.



We are convinced that, today, expertise in data processing means expertise in teleprocessing networks. System and network architectures are also a perfect illustration of our concept of "creative data processing": placing a practical, flexible and easy to use tool at the disposal of people and organizations to enable them to get the maximum benefits from their innovative and productive capacities.

Our growth, in figures.

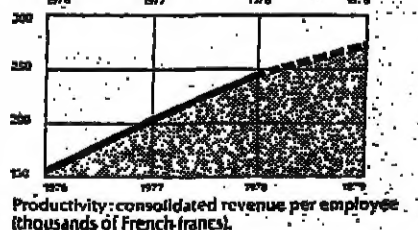
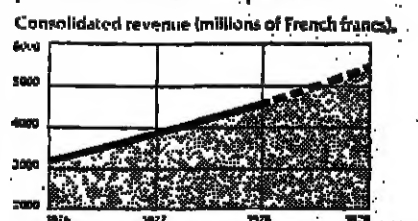
Cii Honeywell Bull's research and development policy, which guarantees its competitiveness in the international data processing market, has been rewarded by continued, balanced growth.

At the financial level, our consolidated revenue increases by an average of 15% a year. Fifty-three per cent of consolidated revenue is earned outside our headquarters country, France, clearly demonstrating our success in international markets — an index of competitiveness.

Our productivity per employee puts Cii Honeywell Bull in the first rank of data processing system manufacturers on a worldwide basis. Our net profit continues to grow, as does our cash flow (16.8% of consolidated revenue in 1976, 17.4% in 1977). And our debt/equity ratio of less than 1 (at the end of 1978) confirms the solidity of our balance sheet and provides us with the means for growth.

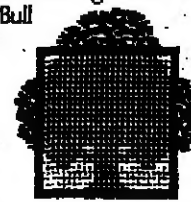
Continual expansion worldwide.

At the marketing level, Cii Honeywell Bull is present now in 32 countries and its products are found in 67 countries on five continents. Our business, which originated in Europe, has spread to the rapidly-growing countries of South America, Africa and Asia. It is developing in the USSR, India and the People's Republic of China, countries which are among our priorities for market expansion.



Furthermore, our association with Honeywell Information Systems Inc. gives us access to the American market — the biggest and toughest in the world. The international success of our Level 64 systems is a significant case in point: out of nearly 1,500 orders for these systems to date, representing 18 million dollars in rental revenue per month, nearly a third came from the United States.

We have set ourselves the objective of being among the foremost worldwide in data processing by taking advantage of all the possibilities offered by a growing market. Ambitious, this may be; but it is also realistic. With its considerable financial, industrial and marketing resources, Cii Honeywell Bull has the means to do it.



Cii Honeywell Bull

Creative Data Processing

Building and Civil Engineering

Libyan projects for Finns

ONE OF the biggest of several contracts which Finnish consulting bureaux and construction companies have signed in Libya has gone to Vesi-Pekka Oy and is worth £1.5m (L1.5m). This concerns the building of civil and military ports in Tobruk. Enlargement of the civil port includes two concrete piers and the dredging of the port basin, at a cost of £1.5m.

Second project, a turn-key contract worth £1.5m (L1.5m) concerns the military port, including an 800 metre long pier and two submarine piers, each 200 metres long.

Another £1.5m (L1.5m) contract has been signed

between the OMP group of Finland and the national organisation for the industrialization of Libya for the building of dairies in the city of Al Beida, about 50 km from the Mediterranean coast in the Al Ghabal el Ardher mountain area. Job includes training Libyan personnel in Finland as well as responsibility for the production and operation instruction for the period of one year. OMP's Finnish co-operation partners in this project are Valio and Hankkija.

Fourth contract, made between Finnish engineering bureau Devecon Oy and the

Libyan Ministry of Transport, involves the planning of a motorway along the Mediterranean coast from the Tunisian border, covering the distance of some 100 km and ending within 50 km from Tripoli.

This road is the main east-west thoroughfare, which is of primary importance to Libya where there are no railroads.

The motorway will have two lanes in each direction and will pass four cities, the biggest of which is the port and industrial town Zawiya with 25,000 inhabitants.

In addition to the road, Devecon will also be responsible for the planning of five bridges.

Brewery extension under way

WORK ON installing the canning line within the building envelope of Carlsberg's £7.2m extension to its brewery in Northampton will start in June.

Ove Arup and Partners leads the Carlsberg project management team which has used the basic management contracting principle of employing several contractors directly responsible to the client, rather than the conventional contractor/sub-contractor combination, in order to minimise the total design and construction programme.

Main contractor is Kyle Stewart and other consultants involved in the scheme are architect Kund Munk of Denmark and local quantity surveyor, Ernest Howard and Son.

£3.3m work at Gatwick

MAJOR EXTENSION on the north-east side of the terminal building at London's Gatwick Airport will cost £3.3m under a contract awarded to Taylor Woodrow Construction by the British Airports Authority.

Work comprises an extension to the arrivals area at concourse level with bridging across the A23, connections to the existing northern bridge and a proposed railway access bridge; and the construction of a balcony extension at restaurant level.

Extension of existing offices on the northern side of the departures terminal is also provided for, and completion is scheduled towards the end of 1980.

Design of the project was carried out by architect York Rosenberg, Marial, G. R. Buckle is consulting services engineer in conjunction with the BAA engineering department under the direction of Mr. G. D. Bell, and quantity surveyor is Wakeman Trower and Partners.

£4m. trunk road project

FOUR MILE section of the A9 between Tore, north of Inverness, and Maryburgh is the subject of a £4m road building contract awarded to Fairclough Civil Engineering by the Scottish Development Department.

This is the fourth major road job awarded to the company by the SDD in the last four years

and includes a three span bridge over the River Conon at Maryburgh and a smaller bridge over a nearby railway line. Consulting engineer is Crouch and Hogg of Glasgow.

Project starts next month and is due to finish two years later. It comes at a time when the Paisley-based division of the company is reconstructing another section of the A9 trunk

road between Crubamsore and Kingussie at a cost of £4.5m.

Scottish division of the company is also completing a new £5m bridge spanning the Cromarty Firth which will provide better links between Inverness and Invergordon—now said to be Britain's most northerly industrial centre with a £27m aluminium smelting complex.

Tempers the sun to the pilgrim

DESIGN, fabrication and erection of 440 steel pylons, each 45 metres long will bring in \$50m for the Nippon Kokan company under a sub-contract to Owens Corning Saudi, to provide the structural steel-work for the 108-acre roof at the new Jeddah airport in Saudi Arabia.

Intended to improve the facilities for the vast numbers of pilgrims coming from all over the world each year to go to Mecca, 48 miles away, the vast "tent" of Teflon-coated glass fibre is to be supported by the pylons which will taper from 2.5 to 1.25 metres.

Erection of the steelwork is expected to be completed in

October next year and part of the shelter will be ready for the 1980 pilgrimage.

£2m worth to Laing

EXTENSIONS TO a silicon chip factory and three housing contracts total nearly £2m worth of work for John Laing.

At Silconix's factory in Morrison, Swansea, a contract for about £800,000 involves building a single-storey brick extension to provide assembly and test areas, stores and offices. A new boilerhouse with associated service rooms is to be built, and existing offices are to be altered, and the canteen

General contractor for Jeddah is Hochtief AG of Essen, West Germany.

extended. External work includes laying new drains and providing new paths, road extensions and car parking.

First contract in a film plus award from Southwark Council is for rehabilitation of nine five-storey blocks on the Dodington Estate at Dodington Grove, Walworth, London. Under a £915,000 programme, 180 flats are to be repaired, modernised and redecorated.

At Ritchie House, Howland Estate, a design-and-construction contract worth about £100,000 will lead to a tiled, pitched roof being provided and alterations to the drainage system of the block.

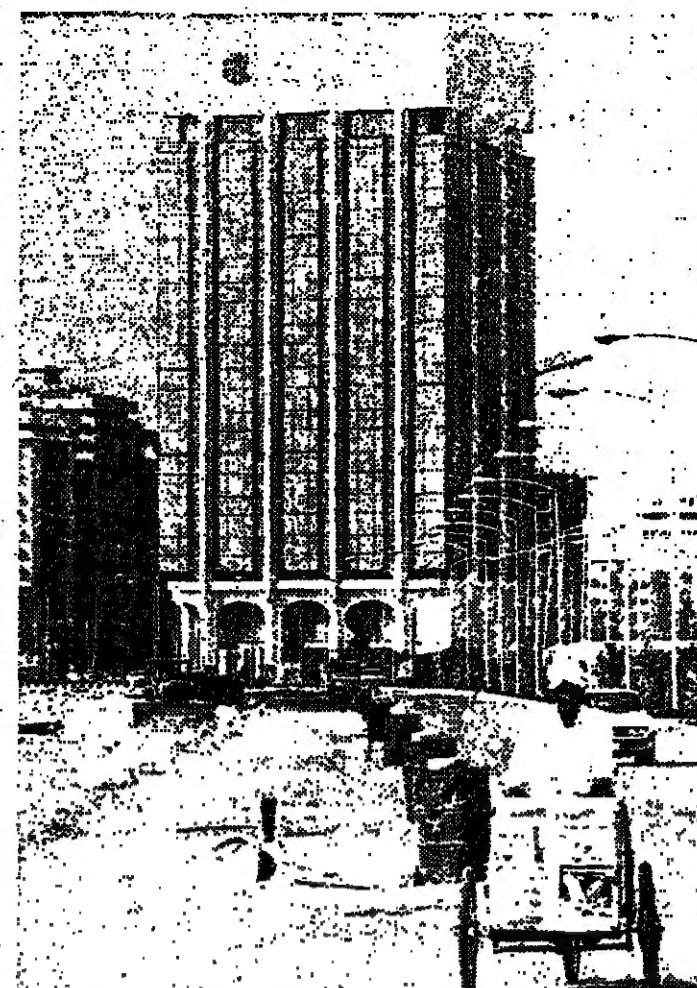
A three-storey block of flats in Bernersley is to have a tiled, pitched roof under a £30,000 design and construction contract.

Mowlem in Tanzania

EXPANSION of a fisheries development centre on the coast at Mbeuni, north of Dar es Salaam, Tanzania at a cost of £900,000 has been awarded to Mowlem Construction of Nairobi, Kenya.

Project awarded by the Tanzanian Ministry of Natural Resources and Tourism includes the erection of five single-storey buildings, and ground works including new site roads.

Work has just started and should be completed by the end of this year.



In hot, sunny countries glazing of buildings can be a problem. It seems to have been overcome at the Bank of Credit and Commerce in Abu Dhabi where about 5,000 square metres of Pilkington's SunCool solar control glass has been used. Pilkington says the material reduces solar gain by over 70 per cent thus easing the load on the air-conditioning plant.

School in Abu Dhabi

JOINT VENTURE operation between Tarmac International and the Dubai-based Ghurair group of companies, G & T Construction, has won a £3m school building contract.

Work has recently begun on the 44-classroom school which

will accommodate 1,000 children from the Al Khubairat community of the Emirate. Project also includes the provision of a swimming pool.

Latest job has brought value of work done here by the company to £20m.

Offshore quarters

TO BE located on all three platforms on the Ninian Field is modular-form accommodation under a contract worth £1.47m awarded to R. B. Farquhar by Chevron Petroleum (UK).

Largest job at just under £1m, is for a five-storey-high accommodation module comprising galley, mess, cinema, games rooms, quiet rooms, medical

centre, communications rooms, fire control room, helicopter reception room and sleeping quarters in four-man cabins for 76 men with associated toilet and shower facilities.

Entire package is being constructed in modular form at Huntley, assembled on the quayside, then lifted by crane aboard a supply barge, and shipped to the Ninian Northern platform.

Tough spray painting equipment

PORTABLE electric airless spray painting equipment for use by contractors, decorators and maintenance crews, has been designed to withstand the rigours of transportation and on-site operation.

Powered by a 1½ hp electric motor, it has a piston-type pump and simple changeover switch for operation from a normal 220-240V 13 amp socket, or from a portable 110V generator.

Quiet and reliable in operation, the Electra gives a steady surge-free delivery which ensures a smooth, even spray pattern. A simple adjustment knob allows the operator to vary the pressure up to a maximum of 3,500 psi, to match the material being sprayed. The unit has been engineered to maintain a relatively constant delivery rate



regardless of pressure variations.

When used with oil- and water-based materials, the Electra will maintain two spray guns with 0.8 mm spray caps handling a total of 2.1 litres per minute. When used directly immersed into heavy-bodied materials, the unit will maintain full pressure on one spray gun with a 0.53 mm spray cap providing a total of 1.7 litres per minute.

DeVilbiss Company, Ringwood Road, Bournemouth B20 167J 111.

IN BRIEF

● English Industrial Estates Corporation says work has started on two advance factories for the Department of Industry at Sherfield Road, St. Helens in the Merseyside special development area, under a contract worth about £400,000 awarded to A. Monk and Co.

● TAC asbestos-cement pipes, valued at £150,000, are to be supplied for a re-sewering scheme for South Hams District Council, acting as agents for the South West Water Authority, to replace existing sewers in Totnes, South Devon.

● Building services contracts valued at over £1.5m have been awarded to Young Austen and Young for work on the Manchester area. Main contract, at £1m, is for the installation of air conditioning, heating and plumbing services in a new factory at Church, near Accrington, for Joseph Arnold.

● Supply and erection of a bulk fertiliser store at Ince, Cheshire, for U.K.F. Fertilisers is to be undertaken under a £800,000 contract by Bison Concrete (Northern).

● Two contracts worth more than £600,000 have been won by J. F. Finnegan. Largest, at nearly £520,000, is for Mersey-side Improved Houses, for 39 new homes at Fazakerley, Liverpool. Second job covers the provision of staff changing accommodation and minimal care unit at Ischbrook Hospital, Wellingborough, awarded by Northamptonshire Area Health Authority.

● William Tawse has won a contract worth almost £800,000 for the development of a new quarry for Lothian Regional Council at Markle Mains, near East Linton.

CONTRACTS AND TENDERS

HOME-GROWN CEREALS AUTHORITY

Sale of Barley Ex Intervention Stocks

The Home-Grown Cereals Authority on behalf of the Intervention Board for Agricultural Produce has been instructed to sell by Tender barley from the Board's Intervention Stocks.

Sales will be ex-store and details of the stores and other arrangements are embodied in a Notice of Invitation to Tender together with tendering forms which are available from:

Home-Grown Cereals Authority,
Hamlyn House, Highgate Hill,
London N19 5PR

Tel. No. 01-263 3391.

Stocks for sale are approximately as follows:

	Stock
Ely, Cambs.	3 331 Tonnes
Diss, Norfolk	1,550 "
Hadleigh, Suffolk	2,123 "
Hartlebury, Worcestershire	1,668 "
Manby, Louth, Lincs.	7,590 "
Old Dalby, Melton Mowbray, Leicestershire	4,529 "
Poimort, Falkirk, Scotland	129 "

Allocations will be made on the basis of tenders received for each of the closing dates subject to availability of stocks on these dates:

CLOSING DATE FOR TENDERS WILL BE

12 noon 2nd March 1979
12 noon 9th March 1979
12 noon 16th March 1979

INSTITUTO DE RECURSOS HIDRAULICOS Y ELECTRIFICACION REPUBLIC OF PANAMA

ADVANCE NOTICE OF INVITATION

TO BID NO. 538-79 FOR
DESIGNING, MANUFACTURING SUPPLYING,
AND INSTALLING 230KV OIL FILLED
SELF-CONTAINED CABLE FOR MAIN
TRANSFORMER LEADS TO SWITCHYARD

The Instituto de Recursos Hidraulicos y Electricidad (IRHE) located at Poli Building, at Justo Arosemena Ave. and 27 East Street in Panama City, Republic of Panama, announces its intention to open bids for designing, manufacturing, supplying and installing 230 KV oil filled self-contained cable for main transformer leads to switchyard.

The tentative date for availability of bid documents is the first day of March 1979. Bid opening date is planned for three months after availability date for bid documents. The exact date and hour and place for opening of proposals will be communicated at the time of delivery of bid documents.

IRHE has received the loan PAN-1470 from the International Bank for Reconstruction and Development (World Bank) in various currencies equivalent to 42 million U.S. dollars towards the foreign cost of the Fortuna Project. It is intended that proceeds of this loan be applied to payments for foreign costs under the contract for which this advance notice of invitation to bid is issued. These foreign costs will be eligible for disbursements from the loan in the currency of the country of the contractor or in U.S. dollars. Bidders can be considered only from World Bank member countries and Switzerland.

When available about March 1, 1979, bid documents as well as all plans, drawings, specifications and proposal forms may be inspected at IRHE's offices in Panama or at Chas. T. Main International, Inc., Boston, Massachusetts, U.S.A., or at the Panamanian Embassies in the United States of America, France, Italy, United Kingdom, Sweden, Germany, Switzerland, Brazil, Spain and Japan.

The complete set of documents may be obtained directly from the purchasing department office of IRHE located in the Poli Building, 2nd floor, Justo Arosemena Avenue, or be requested by mail at Apartado Postal 8265, Panama 5, Panama. They may also be obtained at the office of Chas. T. Main International, Inc., Southeast Tower, Prudential Center, Boston, Massachusetts 02109. There is a non-refundable payment of U.S. dollars 100.00 (U.S. Dollars) per set of documents. Cheques should be payable to IRHE.

Attn: Edwin E. Fabrega
General Director

Gives better insulation

IT IS said that the market for insulated composite cladding is likely to reach half a million square metres by about 1982 and, hoping to meet the major share of this, is a company which has just launched a new range of metal/foam/metal composites under the brand name Unishield.

Single element panels all have insulation values better than those required by the new regulations, which become mandatory from June 1 this year, says the maker, Cape Universal Cladding, PO Box 165 Tolpits, Watford WD1 8QZ (02-335666).

Each of the three profiles now available includes new features such as a patented side lap closure, and is marketed as a complete system, including flashings, fittings and translucent lights. Method of fixing is said to be simple and speedy.

Two principal profiles have a minimum thickness of 33 mm of polystyrene foam and can be used either for roofs or vertical cladding. Finishes

include Plastisol PVC leather-grain on steel profiles, or stucco embossed aluminium. A third profile is for walls only.

All are available in lengths up to 12 metres and provide about twice the spanning capability compared with conventional metal sandwich built-up constructions, claims the company.

Production has been backed by £1m investment including new rolling and foaming plant, in order to produce a repeatable, high quality, made-to-measure, sheeting element. The company says it has doubled the size of its metal rolling plant at Bishop's Cleeve, near Southampton. At its Watford factory it introduced the polystyrene foam process which has certain advantages over conventional urethane foams. Here, its technical department devised and patented a means of sealing the insulation foam at each side, using a special PVC extrusion, and foam thickness was increased from 30 to 33 millimetres.

CRENDON

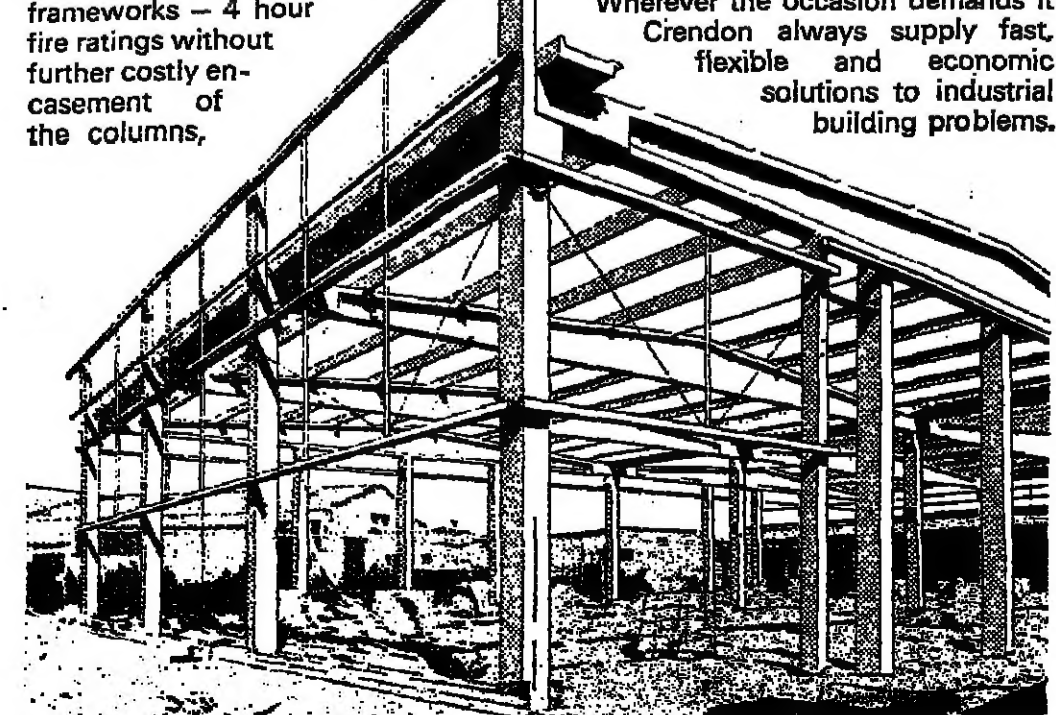
Always rise to the occasion

Look to the architect to give you the right Production/Storage/Office ratios in your new building. Expect the architect to look to a Crendon concrete frame for just that degree of flexibility in the final layout which achieves those things economically. Expect him, too, to demonstrate the other important advantages of precast frameworks — 4 hour fire ratings without further costly encasement of the columns,

maintenance free structures which require no painting, ever.

This new development at Welwyn Garden City for the new Towns Commission provides 30 industrial units and covers 6000 sq. metres. It was designed by the Louis de Soissons Partnership, around Crendon 4° frameworks to have the widest appeal to potential occupants.

Wherever the occasion demands it, Crendon always supply fast, flexible and economic solutions to industrial building problems.



CRENDON CONCRETE CO. LTD
Thame Rd, Long Crendon, Aylesbury, Bucks. HP18 9BB Tel: Long Crendon 208481
NORTHERN Rawcliffe Rd., Goole, N. Humberside. Tel: Goole 4201.
SCOTLAND Shotts, Lanarkshire ML7 5BP. Tel: Shotts 20261.

COMPANY NOTICES

CITY OF BERGEN 1973/1991

7½% Lux. Frs. Loan

Notice is hereby given to bondholders of the above loan that the amount redeemable on April 10, 1979, i.e. 25,000,000 Lux. Frs., was bought in the market.

Amount Outstanding: Lux. Frs. 375,000,000

Luxembourg, February 19, 1979.

P. S. A. PEUGNOT & Co., 1967-1968

LOAN OF 100,000,000 FR. 1967-1968

The redemption on the 15 March 1979

of 100,000,000 FR. 1967-1968

has been effected by the City of Bergen

on the 15 March 1979, at a price of 100%

plus interest to the date of redemption.

The interest on the loan has been paid

on the 15 March 1979, at a rate of 7½%

per annum, as provided for in the

loan agreement.

The City of Bergen, 15 March 1979.

By Order of the Mayor, H. J. L. DAVY.

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THE MANAGEMENT PAGE

EDITED BY CHRISTOPHER LORENZ

John Elliott looks at the likely impact of the introduction of tax concessions on shares for employees

Swelling tide of employee share schemes

ONE OF the more lasting effects of last year's political pact between the Labour Government and Liberal MPs is the gradual spread of the employee share ownership form of profit sharing in various parts of British industry and commerce. This is because the pact led the Government to include income tax concessions for employee share ownership in last year's Finance Act.

The official starting date for the concessions is now less than two months away and a significant number of companies have developed schemes. The Inland Revenue, which has set up a special unit to vet schemes, has about 60 passing through its hands, half of which are new arrangements and half are adaptations of old schemes. The companies involved range from ICI and British Sugar Corporation to Lloyds Bank, Foster Clothing and the House of Fraser. Several of them have been given draft approval by the Inland Revenue. Employees in all these companies will now be eligible for an allocation of shares which will then qualify for increasing reductions in income tax depending on how long they are held.

The Finance Act's arrangements cover share handouts of up to £500 a year per employee in schemes which are open to all employees. The shares are bought and held by trustees (in the case of ICI's scheme there are four employee and four management trustees). In general, 50 per cent of the tax is waived after five years and 75 per cent after seven years. No income tax is due after ten years.

Many people assumed, when these arrangements were passing through Parliament, that they would lead to a fairly simple form of application in companies which would either decide to adopt or to ignore the concessions. However, it is already clear that this was incorrect and that there will be a wide variety of applications.

Companies like ICI, for example, are adapting existing share schemes, while others, such as Lloyds Bank, are adapting mixed share and cash hand-

outs. Others, such as Foster Brothers, are fashioning schemes to operate as self-financing productivity schemes.

The British Sugar Corporation is one company that is simply setting up a scheme to accommodate the personal savings of employees and is not making a direct contribution itself.

Up till now such forms of share ownership have played only a small part in British employee participation policies and, apart from one or two notable exceptions like ICI, there have been few if any at the heavy manufacturing end of British industry or in companies that are strongly unionised. Trade unions have traditionally regarded such schemes with a mixture of disinterest and opposition because they are primarily interested in increasing their members' influence and wealth in other ways.

But the new tax changes have caught a tide that was beginning to swell in 1978 and 1979 as employers, faced with TUC demands for industrial democracy innovations like the Bullock Report's worker directors, began to look for "softer" forms of participation that might also increase the economic understanding of employees.

Few companies, however, believe that share ownership can form a primary method of employee involvement, although finance directors are often more interested than personnel experts in the notion. This is partly because the money spent by the company buying the shares returns to the company immediately as investment which qualifies for corporation tax relief. And, if the shares are held under the new Finance Act arrangements, the investment is effectively guaranteed

to the company for at least five years.

ICI's scheme is one of the oldest in the UK. It was introduced in 1953 and was partly responsible for giving such arrangements a bad name. This is because, at the beginning, workers sold their newly-received shares as they passed through their factory gates on the way home. For the past seven or eight years ICI has estimated that about 40 per cent of its 85,000 qualifying employees have kept their shares while the rest have sold them more or less immediately.

Following modifications introduced at ICI last year, the amount of money allocated is related to a value added assessment of the company's profits. Before last year the sum was fixed unilaterally by management. The average handout last year was £325 gross, or £206 after the income tax that then had to be paid. This meant that a middle manager on say £10,000 a year received £710 gross while a £2,000 a year manual worker received £142. The total gross bonus was £27.3m of which nearly £10m went in income tax.

Now the scheme has been changed so that employees can choose each year whether to opt for these old style taxed shares which are immediately saleable, or for up to £500 of the allocation to be in new style shares which would remain with the scheme's trustees for at least the five-year qualifying period. Higher paid people will be able to take their allocation in excess of £500 in the old-style taxable shares and other employees who do not want their money locked up for the five years may also opt out of the new scheme.

Another concern adapting its earlier arrangements is Lloyds

Bank which introduced a mixed cash handout and share scheme a year ago for those of its 42,000 employees with more than five years' service. Employees in the bank's bottom three pay grades who earn up to about £4,400 a year were given a cash handout while those above received shares which of course had to be taxed. This scheme would not pass Inland Revenue scrutiny for the new tax concessions because one of the Finance Act's rules, which was included to remove any class divisions in a scheme, says that the arrangements must be open to every employee with a certain length of service in a company. So Lloyds has adapted its arrangements which went to an emergency annual meeting for approval on February 15.

In future the people in the bottom three pay grades will have an option of either taking cash or shares. Those above can choose whether to take old style taxable shares, which can be sold quickly, or the new style which have to be held by the trustees for five years.

Yet another sort of scheme has been introduced by Foster Brothers Clothing for its 4,000 employees in shops, warehouses and factories. This scheme was being designed before the Finance Act concessions were introduced because the company wanted to start a company-wide productivity scheme in an attempt both to give a day-to-day shop or factory floor incentive and to provide some unifying force covering the whole company.

When the Finance Act emerged, the scheme was redesigned. But it still retains a large, taxable, cash element. This has been done by giving the employees a choice of taking their bonus totally in cash, totally in shares, or half in cash and half in shares. The



company's management believes that the availability of cash will help boost the day-to-day productivity aspect of the scheme while the share ownership option will help to unify the company. It is expected that about 85 per cent of the employees will take cash in the first allocation for the year ending this month.

The size of the overall bonus is calculated according to a formula embracing a value-added assessment of productivity, the company's profit, and its employee costs. The cost of the shares is geared to the company's share quotation price on the five business days immediately after the announcement of its annual results. The management expect that the bonus for the first year will add 6 per cent to basic pay—which will for example mean a £134 handout to a person on a basic weekly rate of £43. Since Foster has a lot of part-

time workers, it has opened its scheme to all full-timers and part-timers doing 16 or more hours a week who have worked for the company for a full year. Part-timers working eight to 15 hours weekly qualify after they have been employed for five years. The company has also built a sanction against taking industrial action into the scheme which was discussed with employee representatives but was not formally put through union negotiating or consultative machinery. This sanction is that "employees who take industrial action which could have an adverse effect on the profits of the group should forfeit their profit share for the period concerned."

Because of its cash element, this Foster scheme has had to be vetted by the Department of Employment's incomes policy division to ensure it qualifies as a self-financing productivity deal, and the company intends

to keep the arrangements, it has agreed even though the pay policy is currently breaking down. There are two main exemptions to the official pay limits. The first is that all schemes which only provide shares in line with the Finance Act's tax concessions are exempted from the pay limits. Second, schemes such as ICI's which include other share and cash options that were introduced before the current phases of pay policy began are also exempted (in the same way as extra payments based on ordinary old bonus schemes are also allowed in excess of the pay limit). But new schemes, like Foster's, which have either cash or elements which include other forms of shares, must satisfy the Government's criteria on self-financing productivity schemes.

While schemes like Foster's ICI's and Lloyds Bank's provide choices for their employees,

some companies are designing or adapting schemes which do not include a cash alternative.

For example both the House of Fraser and Bunter have schemes whereby employees are issued with an allocation of shares. This type of scheme appeals to some companies like the House of Fraser, where operations are scattered around the country and where some subsidiaries (like Harrods in the Fraser case) may have their own cash incentive schemes which will continue to operate independently. This means that the employee takes the group-level share or forgoes his bonus. But the advantage for the company is that it is not required to pay out cash as an alternative and so can reinvest the whole of the profit share in its business and obtain corporation tax relief.

Yet another type of scheme is a savings plan which is popular in the US, where profit-sharing schemes are often linked with pension arrangements. This type of scheme also appeals to more paternalistic managements which feel that employees should make a direct contribution to the cost of the shares. The basis of the scheme, which is being considered by some UK companies, is that a deduction is made from employees' wage packets to pay for shares. The company then tops this up with an allocation from profits.

But, while the company contribution will qualify for the Finance Act's tax concessions, there is no similar tax relief for employees' savings which come out of taxable pay.

So it can be seen that a wide variety of schemes are being introduced to meet the different traditions, management styles, financial needs, and employee attitudes of different companies. It is of course too early to suggest that the tax changes are going to make employee share ownership widely popular in the UK. But what is already clear is that the tax changes have helped to start a new trend in profit sharing.

SHOULD Europeans and Americans who visit or work in the Arab world bother to learn Arabic?

Obviously there are some people — diplomats and commercial bank managers, for example — who have to be fully aware of what is going on around them, and need to speak and read Arabic fluently to do their job.

But most businessmen and other people visiting or even based in the Arab world can present a reasonable argument for not learning it. The Arabs with whom they are likely to deal speak good English; Arabic is a difficult tongue for Europeans to learn and it takes a long time to gain sufficient fluency to do business in it (British diplomats spend a solid

16 months at their special school, and even then few are said to be totally fluent in it). And few businessmen are likely to be involved in the Arab world long enough to justify investing so much time in the language.

But having visited Arab countries for two or three months each year for the past few years for the Financial Times, I felt increasingly foolish knowing almost no words of Arabic. I occasionally used Arabic phrases without knowing what the words meant individually or how they should be pronounced, and felt frustrated at not being able to explain anything faintly complex to a taxi driver or make a simple request to a non-English speaker on the telephone. Phrasebooks and self-teaching Arabic books did not

seem to help.

I wanted a course that taught the rudiments of colloquial Arabic explained the basic grammar, taught a vocabulary and supplied a teacher whom one could question till one understood. My aim was to be able to hold simple conversations with Arabs who did not speak English, and at least to be able to handle some Arabic greetings and polite conversational phrases with senior people with whom I was going to talk seriously in English. For one is assured, Arabs are disproportionately pleased to find a European who even attempts to speak the language. The grammatical base would, I hoped, enable me to build on what I had learnt.

So I enrolled on what was in effect a five-day "immersion"

course, run three or four times a year for £190 by the School of Oriental and African Studies in London. The advance instructions said dauntingly that no English would be used in introducing new material, that lessons would continue late into the night (the course was residential) and that I was to bring a tape recorder with which to listen to cassettes of what I should have learnt, after lights out, so to speak.

The fact that the course was intensive rather than piecemeal, since I knew that owing to the rather unpredictable nature of my work I stood little chance of attending regular weekly lessons.

There were two classes of 12 people, composed predominantly of sales managers with a

sprinkling of bankers and consultants. The teacher of our class was an Egyptian scientist working in Britain, who had elegant mannerisms and a superb gift for acting. This was useful as the basic teaching method was to engrain phrases and words on one's brain by demonstration, gesture and repetition. Endlessly we rehearsed with the teacher, or each other, haggling with taxi drivers and berating the hotel clerk who has lost one's reservation.

En route we learnt some simple grammar, while pronunciation was polished up in the language laboratory. Over the five days we had explained to us the vocabulary for a whole range of situations, from making an appointment on the

telephone to handling a crude "Who are you, where do you live and what do you do" conversation. In all we could have learnt about 500 words.

I came away reeling, with phrases and the gestures associated with them, racing through my mind, overwhelmed by the amount of material thrown at me and clutching two cassette tapes and a notebook of all I should have learnt.

A fortnight later I went on a two week trip to Kuwait. I don't consider myself by nature a brilliant linguist; I tend to be rather bashful and have found as I did on the course, that one needs lots of practice before the right Arabic word leaps from brain to tongue the moment it is needed.

But I have also had some satisfaction from directing taxi drivers to places I would otherwise have had difficulty getting them to go, and from occasion-

ally being able to get the drift of simple Arabic conversations going on around me.

The problem is that if one only pays short visits to the Arab world and spends a lot of time with English-speaking people, one may not get sufficient practice to advance very far, without a great effort. I cannot read Arabic script or understand classical Arabic, the form in which speeches are usually made and books and official publications written. (The next stage, however, would be the SOAS intensive course in classical Arabic.) But I already feel less of an alien in an Arab country and that alone is worth something.

Details of the course referred to from: Extramural Division School of Oriental and African Studies, Malet Street, London, W.C.2.

James Buxton

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LOMBARD

Iran and world currencies

BY SAMUEL BRITTON

IT IS AN ill wind that blows nobody any good. Like most proverbs this is not quite true. The events in Iran are certainly harmful for the world economy, but they have hit some currencies more than others and sterling has almost certainly been a net gainer.

Iran is part of the story, although not the whole of it—the other part having a great deal to do with the North Sea. Indeed the time could soon come when the British authorities are again faced as they were in 1977 with an embarrassing inflow of funds into sterling.

On that occasion the pound was allowed to rise, after an excessive delay, and so far from the catastrophic effects predicted by orthodox Treasury wisdom inflation and unemployment both subsequently fell.

The political future of other oil producing countries is anyone's guess. But the most likely economic effects of what has already occurred in Iran is on the world oil price. OPEC has already agreed to a staged increase in the dollar price of oil amounting to 14.6 per cent in the course of 1979. But much higher spot prices have already been paid for cargoes applying to a very small fraction of world trade. Perhaps a more significant pointer is Abu Dhabi's detailed posting of staged increases in certain grades amounting to over 23 per cent in the course of the year.

But not every country will lose equally. If one is simply looking at the exchange rates of the main industrial currencies against each other there will be net gainers. As a first approximation, currencies will suffer according to the role of oil in their import bill.

Mr. Alan Budd has just pointed out in a Fielding, Newson-Smith Commentary that net UK imports of oil are

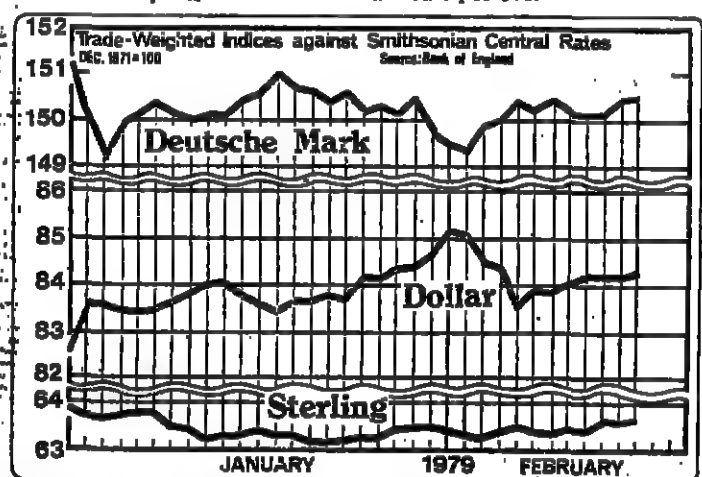
expected this year to be about \$1bn. By contrast U.S. imports were running recently at about \$40bn and the Japanese at over \$25bn. Indeed the initial effect of the original OPEC price announcement was a marking down of the dollar and the yen.

The big question about the dollar is whether there is now going to be a sufficient improvement in the non-oil current balance of the U.S. and sufficient confidence in American financial policies to halt the headlong diversification out of dollars in which some countries and investors were indulging last year. If the answer is "yes," about a quarter of the increased oil revenues of OPEC countries could flow once again to New York and the impact on the dollar might be much less than recently feared.

In some ways Japan, whose oil import bill amounts to over 30 per cent of total imports, against just over 20 per cent for the U.S. is in a worse position; and this indeed has been the foreign exchange market view. Nor are Germany and France all that well placed, all of them importing far more oil than the UK. Indeed, the failure of the market to rise in the face of recent troubles is itself pretty notable.

There are also some longer term aspects to consider. Some UK Department of Energy experts are said to be expecting a doubling of the real oil price by the mid 1980s. Such forecasts are notoriously fallible; but if they are believed they are a bull point for sterling.

Even now oil does not dominate money. But Mr. Callaghan and Mr. Healey can be grateful to a combination of events in the hot Persian Gulf and the cold North Sea for a breathing space, which enables them to go for a post-Easter Budget and to decide on their strategy free of the crisis atmosphere of past difficult periods.



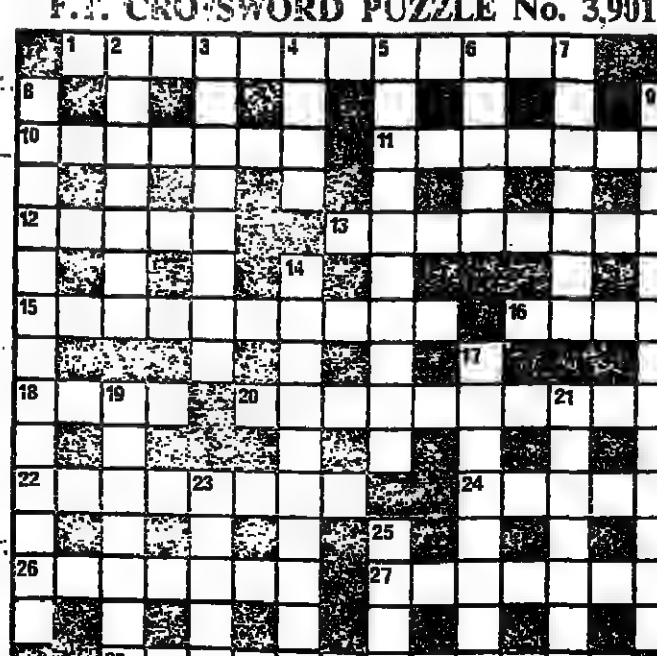
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BBC 1

+ Indicates programme in black and white.

7.05-7.55 am Open University (Ultra High Frequency only), 9.15 For Schools, Colleges, 10.45 You and Me, 11.00 For Schools, Colleges, 12.45 pm News, 1.00 Pobble Mill, 1.45 Barnaby, 2.01 For Schools, Colleges, 3.15 Songs of Praise, 3.35 Regional News for England (except London), 3.55 Play School, 4.30 It's the Wolf, 4.25 Jackanory, 4.40 A Bundle of Bingles, 5.05 John Craven's Newsround, 5.10 Blue Peter, 5.40 News, 5.55 Nationwide (London and South-East only), Northern Ireland—5.53-5.55 pm

F.T. CROSSWORD PUZZLE No. 3,901



- ACROSS
- 1 Tests case for group of strikers (3, 2, 7)
 - 10 Discovered and guided round all coast (7)
 - 11 Spot old boy returning with phoney medicine (7)
 - 12 Key month one spent in holiday idle (5)
 - 13 Express wrongly that girl went to gallery (8)
 - 15 Penetrate part taken out by means of... (3, 7)
 - 16... woman deceived by Jove swanning around (4)
 - 18 Blow into wind (4)
 - 20 Nude in push to reform Scot force (10)
 - 22 Leaves container for drink to club porter we hear (3, 5)
 - 24 Trunk found on hill like this (5)
- DOWN
- 2 Ring cricket club over one place at back of head (7)
 - 3 Unreservedly dismissed according to the rules (8)
 - 4 Servant, they say, created (4)
 - 5 Building ceremony with excellent old-fashioned... (7, 3)
 - 6... call from leaders arguing the toss (5)
 - 7 Notice young attendant escape by percolation (7)
 - 8 Separate letters sent to group of flats all over principal towns (5, 8)
 - 9 Two cows getting nearer the ground (5, 3, 5)
 - 14 Off with Europeans sharing expenses (5, 5)
 - 17 Sayings with which Edward called the tune (8)
 - 19 Furious at seeing father grotesque (7)
 - 21 Brother Marxist willing to provide spear (7)
 - 23 Take over for a party exercise (5)
 - 25 Fish trodden underfoot (4)

CORRUPTION in public and commercial life is rife, is growing and the courts will do what they can to stop its cancerous growth. That admirable sentiment was the gravamen of the judgment of the Court of Appeal last week when dismissing the appeal of two senior executives of Rael BCC Communications and an army officer attached to the sales staff of the Ministry of Defence in Iran who respectively gave and accepted bribes in return for ensuring that Rael obtained a contract for supplying radio equipment for Centurion tanks to be supplied by the British Government. Since the army officer's employer, Her Majesty's Government, was keen to see that Rael got the contract, was the conduct of the three men, morally reprehensible as it undoubtedly was, corrupt and criminal?

In the Rael case the jury had been told by the trial judge, the Recorder of London, that "corruptly" was a simple English adverb, "and I am not going to explain it to you except to say that it does not mean dishonestly. It is a different word which means purposely doing an act which the law forbids as leading to corruption." In the every backhanded, kickback, hush-money, or more linguistically refined, every pourboire, given to an employee in relation to the employer's affairs caught under the criminal law of corruption? It would appear so.

In the leading case decided 20 years ago a person was charged with offering a gift to a mayor in order to help himself to acquire some land belonging to the council. His defence was that he had not offered the money corruptly but

in order to expose corruption, and his intention had been to bring the matter to light if and when his offer was accepted. That defence was roundly rejected, on the ground that the accused's motive for offering the inducement was irrelevant.

THE WEEK IN THE COURTS

BY JUSTINIAN

"Corruptly" was held to mean only deliberately offering a person with intent that he should enter into a corrupt bargain. The mere agreement by the mayor to accept the gift offered would in itself be an offence, and that, therefore, what the accused had intended to induce the mayor to do was something prohibited by the law.

A payment made to someone with his employer's approval is surely not a corrupt bargain. Otherwise gifts which are generally indulged—tips to waiters, Christmas boxes to staff from the employer's customers, and the entertainment of employees—would all be corrupt transactions. But presumably, if anyone doing any of those things was prosecuted, a jury would decide that there was no corruption if the size of the gift, its

customary nature and its openness did not suggest any sinister implication. If so, where is the line to be drawn?

The Rael case poses the dilemma that the decision of the Court of Appeal does nothing to dispel. In 1970 the Iranian Government wanted to equip its army with Chieftain tanks. It agreed to buy such tanks, but what it bought could not be fitted with the same kind of radio equipment as was used in the tanks in service with the British Army, on account of production difficulties. Other radio equipment had to be found. Suitable equipment was being manufactured by the Rael company and by at least one rival US company. The British Government was not unreasonably keen that the Iranian Government should buy Rael. Negotiations for the sale were begun and carried on at governmental level.

In 1971 and 1973 a major in the Royal Corps of Signals was doing a spell of duty with the Ministry of Defence. His rank and expertise in radio equipment made him ideally suited to helping his government and Rael in the negotiations for the contract. In 1971 the prospect for success in getting the contract for Rael tanks and the Iranian Government was able to demonstrate that the trials were conducted unfairly. Senior staff at Rael became convinced that the contract would be won only if payment of "commission" was made. Hence one of the two executives who had met the major agreed to pay the major large sums of money in return for which he would see that Rael's equipment was accepted by the Iranians. Early in 1972 a contract worth between £4m and £6m was concluded between a British Government agency and the Iranian Government.

That ruling favours the view that if the employee in accepting a bribe (even a secret one) did not intend to do anything contrary to the interests of his principals no offence of corruption was committed. The prosecution would have to show that a contract gained by the accused was no less advantageous to the company whose servant was bribed than a contract with any other company would have been. This seems to make good sense, but not it appears sound law. Either the House of Lords should take the opportunity of reviewing this unsatisfactory branch of the law, or the Law Commission should quickly divert its attention to the topic. The control of corruption is so important to any civilised society that the law should be as precise as possible.

* R. V. Webb and others.

Freeze bites into savings

WITH THE abandonment of today's Plumpton and Nottingham programmes due to freezing ground conditions, the number of meetings lost has crept up to 110, only three short of the worst previous tally for an entire season. Furthermore, prospects of racing resuming tomorrow appear bleak to say the least for both Towcester and

Association into a savings account with a building society. For the most part the 200 or so senior jockeys riding under National Hunt rules are self-employed, with no retainer to fall back on. They are caught in one of the grimmest periods for riders since the war, for the money of their business does not allow for the loss.

It is therefore not surprising to find many jockeys with families to support, mortgages and often out-of-pocket expenses, such as running a car and abortive journeys to "late abandonments," being forced to draw on the scheme set up to cushion the financial blow which comes for many—at least temporarily—on retirement from the saddle.

Many trainers and jockeys, both in the south and north, will be hoping that Windsor on Wednesday will not prove yet another success for the weather. The Fairlawne Chase, brought into being 15 years ago, could provide a useful Cheltenham Gold Cup guide, for the 33 entries include Gay Spartan and Gaffer as well as Border Incident.

Tony Dickinson has already

announced that the Piper favourite, Gay Spartan, will be travelling down to Windsor and I shall be surprised if Falke Walwyn does not decide to run market rival Gaffer.

However, both those chasers as well as Border Incident are engaged in the Jim Ford Challenge Cup at Winterton on the following day, and the picture is unlikely to become clear until ground conditions can be determined on Wednesday morning.

Despite the desperate need of a public outing for virtually all the Gold Cup candidates no trainer in his right mind is going to risk a Cheltenham prospect until he feels satisfied about the state of the ground.

THE COUNTRY Landowners' Association has called on the Energy Secretary to hold a public inquiry into plans to dig a £130m "super-pit" near

Stafford.

The association is concerned at loss of farmland around the village of Kopton.

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ENTERTAINMENT GUIDE

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THE ARTS

St. John's, Smith Square

Operatic Shakespeare

by NICHOLAS KENYON

A not altogether appropriate title for the fascinating concert on Saturday, we heard little that was operatic and less that was Shakespeare. "From dear Shakespeare's honoured dust" (as Dryden's Prologue to *The Tempest* put it) Restoration dramatists conjured up quite a ferrago of entertainment; in particular, those plays which provided the least excuse for masques and other music were generously provided with such interpolations.

This concert presented three Shakespearean musics for the stage (plus one oddity for the home): Locke's marvellously original *Tempest* interludes (given a rather lack-lustre performance); John Eccles' music for the witches in *Macbeth* (a first modern performance); and the *Tempest* music attributed to Purcell. But actually by his contemporary John Weldon, it now appears—leaves a little musical egg on the face of the scholar who called it Purcell's "most mature work for the theatre".

In fact Weldon's reputation deserves to be—and used to be—much higher. Sir John Hawkins mentioned him in the same breath as Purcell for "sweetness of melody," and indeed it was melody which stood out in this performance, which one heard with new ears: the endless, florid tunes for Ariel (especially "Dry those

eyes," sung with deceptive ease by Judith Nelson) and the noble declamations for Neptune (David Thomas, intense yet lyrical).

By contrast, Eccles' *Macbeth* music was more curious than memorable: a Symphony involving the sinister tones of the serpent (Andrew van der Beek) and some lively witches choruses which out-Dido Purcell are what most impressed (Cathedral Music, 36 Ranelagh Gardens, London W8, have published Grahame O'Reilly's new edition at £1.64—a bargain). The extra oddity was the setting of Hamlet's "To be or not to be" found in Pepys's diary, composed by...? It's a foolish little recitative, however nicely sung by Richard Morton; the accompaniment was revised and played by Tim Crawford—the effect of the whole was resolutely un-tragic. Roy Goodman played with more spirit than sophistication, while the singers, Cora Cappella, sang vice versa. It was good to have a firm conductor in charge of such an occasion: Graham Barber was elegant and effective. On the sidelines, Patrick Edwards and Peter Milne provided a two-man RSC, condensing plots and ascertaining with great virtuosity: but Mr. Edwards' screaming witches' curses in a half-empty St. John's is not my idea of fun or Shakespeare. Musically, a rewarding evening.

Wigmore Hall

Music at Court

by NICHOLAS KENYON

The Academy of Ancient Music is the latest ensemble to set off on the nationwide Early Music Network, and on Thursday they launched their tour with a respectable, if uninspiring, Wigmore Hall concert. Economics do not allow the full-scale orchestral Academy to tour; this is a small chamber group of four plus the counter-tenor James Bowman. Programmes have been designed to be flexible, so different four venues may hear new items.

The concert's title was that of Christopher Hogwood's recent handsome and informative book for the Folio Society, and of the Academy's companion records—a useful holdall formula, since it permits virtually any music composed under court patronage to find a place. Here we heard Italian music by Monteverdi, Vivaldi, and an attractive, darkly coloured cantata by Alessandro

Scarlatti, "Infamata, vulnerata": a group of pieces by Purcell, culminating in the vivid Chaconne sonata which has become an Academy favourite; a scrap of Bach, and Couperin's *Apothéose*.

The whole was elegantly united by Hogwood's introductions, yet there was more than a feeling that a routine was being observed rather than music brought to life. Monteverdi, Vivaldi and Couperin, dressed with sprightly grace in the Purcell but the Couperin demanded a sophistication of articulation and ornament which eluded them. Huggitt's Bach sonata movement was curiously inconsequential; it would have been good to hear some solo work from the gambist, James Ryan. It was a harmless evening, professionally performed; but the regions deserve livelier fare.

Rare play at the Royal Court

As part of the policy to revive neglected plays as well as to present new ones, the Royal Court will present *The London Cuckolds* by Edward Ravenscroft (1644-1704) opening on February 27.

The play was written in 1681 and was by far the most popular of the twelve plays written by this lawyer-turned-playwright. Dealing as it does with idlers of the City of London trying to escape the web of sexual intrigue woven by their wives, the play was a great success with the female citizens and Charles II and his court.

The production will be in the hands of Stuart Burge, the

Royal Court's artistic director, and will be designed by Robin Archer.

Among the cast are Stephanie Beacham, Kenneth Cranham, Alan Dobie, Barry Stanton and James Saxon.

Rossiter Hitch

Owing to influenza, Leonard Rossiter was unable to commence rehearsals as scheduled for *Semi-Detached* at the Greenwich Theatre, which was due to open on February 22.

The production of David Turner's comedy, in which Leonard Rossiter returns to Greenwich in a role he created at Coventry in 1962, will now open on February 28 at 7 p.m.



Shupe Shodeinde and Malcolm Fredericks

Bush

Independence by B. A. YOUNG

Once upon a time there were two West Indians who lived in a newly independent Caribbean island... Mustapha Matura has really written a folk-tale, with his old barman Drakes who loved the bygone colonial days and ends as a night-watchman, and his young waiter who thought they were slavery and ends as a prosperous farmer. The moral is not quite as clear as this might suggest, though. Colonial life may have been slavery, but life under the new government is slavery too (the waiter is only a waiter because "the Department put you here, and here you have to stay").

Allen, the waiter (Malcolm Fredericks), feels that if he only had \$1,000 he could start farming. In an episode where Mr. Matura knocks the square peg of probability hard into the round hole of his plot, a former Governor of the island pays a farewell visit to the hotel, now

a state leisure centre, where Drakes and Allen work. The Governor's lady had to leave the island rather fast because she was involved with a black waiter, who was subsequently charged with having assaulted her and hanged himself. She has so implacable a conscience that now when Allen serves her a drink, she tips him \$1,000.

Drakes (the inimitable Stefan Kalipha) has a row with the Head of the Department, a black Jimmiller named Harper (Ewart James Walters), when he defends Allen for walking out of his job. When it is made clear to him that the state has nothing better for him than manual labour he burns the hotel down with, appropriately, a couple of Molotov cocktails. Here the play finishes, having indeed taken two acts to encompass what is really a serviceable one-act plot: but Mr. Matura then adds an appendix in which Allen brings his girl (Shupe Shodeinde) to see where he once worked, and another political argument be-

gins, only this time with both parties on different parts of the independent side.

The scenes between Stefan Kalipha and Malcolm Fredericks are enjoyable, not only for the pleasant acting of them both but for the lively and expert way Mr. Matura has with West Indian speech. Mr. Walters brings the necessary blend of authority and inexperience to the part of Harper, who I hope is not characteristic of the New Caribbean. Michael Howard and Mary Jones can't do much with the two relics of colonialism, for their dialogue, required to bring up some convenient facts at a rather unlikely moment, is totally unconvincing, though the idiom is apt enough.

The direction by Roland Rees for Foco Novo is as good as usual, and there is a pretty set designed by Adrian Vaux. Something should be done about the smoke-filled break in the second act where the stage is set for the short and not very interesting final scene.

Festival Hall

Curzon and Slatkin

by DOMINIC GILL

The Royal Philharmonic Orchestra's concert under the baton of Leonard Slatkin (who is Music Director of the St. Louis Symphony and the New Orleans Philharmonic) began rather glumly on Thursday with a routine account as curtain-raiser of Beethoven's *Prometheus* overture, and a decidedly undernourished performance from the orchestral point of view of Mozart's D major piano concerto K537.

The sound of the ensemble itself was undistinguished: it is rare indeed to hear the violin line of the concerto's first tutti so vigorously unphrased. Pale contrast to the soloist Clifford Curzon's live and supple shaping of the same movement—the early pages there were some finger fuff, but soon settled. His larghetto, prettily elaborated and ornamented, sustained a line of marvellous purity and simplicity—simple never, but that simplicity which conceals the greatest art. His finale was a study in contrasting textures, light and feather, crisp and bright. Slatkin explored none of Curzon's more delicate paths: the sad sideways slip into the minor key; the sudden quick-

silver emphasis or shy rubato glance.

After such inert orchestral Mozart playing, it was a surprise, and greatly welcome, to discover a fine-grained and vivid account in the concert's second half of Rakhmaninov's first symphony. Slatkin came suddenly to life, and took his players with him—the first movement was splendid, every bright, brassy light, and every dying surge, powerfully con-

tained. The colours he drew from the orchestra, veiled and threatening, were very fine; there may be darker currents of yearning, and darker sorrow too, than he found in the slow movement—but its climax was glorious, clear and broad. The big, piece-meal finale worked up an impressive momentum: real conviction here at last, jubilant in the huge final conversation between strings and brass.

New members for literature advisory panel

The Arts Council has appointed four new members to its literature advisory panel. They are: Robert Gavron, a director of a printing firm; Elizabeth Jane Howard, the novelist; Miles Huddleston, a publisher and director of Constable and Co.; Dr. Graham Nicholls, curator of the Johnson Birthplace Museum and literary secretary of the Johnson Society; and John Whitley, literary editor of the Sunday Times.

The Susan Smith Blackburn Prize

The first annual Susan Smith Blackburn Prize has been awarded in London to Mary O'Malley for her play *Once a Catholic*.

This new literary prize of £1,000 (\$2,000) goes annually to a woman who deserves recognition for having written a work of outstanding quality for the English-speaking theatre.

The prize reflects the values and interests of Susan Smith Blackburn, an American actress and writer who lived in London the last 15 years of her life. She died a year ago, aged 42.

American radio

Disco dominates the air waves

by FRANK LIPSUS

What attaché cases are to one segment of New York society large transistor-cassette machines are to another—notably the young people who comprise the messenger and itinerant set, walking the streets and blasting disco music. Their disco cassettes also serenaded underground passengers till the beginning of this year when a city ordinance put an end to this form of "noise pollution."

If this source of spreading the disco phenomenon has been eliminated, another quickly took its place with the change in format of WKUT, a former mellow-sounding radio station that changed to disco—and gave the sound a shot in the arm comparable to the impact of the film, *Saturday Night Fever*. From rather mediocre ratings, the station became the most listened-to in New York almost overnight. The development impressed radio people not only for the new audiences but also for the speed with which they found the station. There was no doubt that this was an idea whose time had come.

Within a month, over a hundred stations around the country had imitated WKUT; at the same time, the NBC network announced it was hiring the services of the programming advisors to WKUT, without directly saying it would adopt the disco format.

In extensive Press coverage of WKUT's success, station officials described their apprehensions in making the change from a profitable, though unspectacular mode to the untamed, persistent bongo beat of disco. The real surprise is the time it has taken for someone to take the plunge after disco has translated well to nightclubs, films and records.

The delay, I suspect, reflects the same reluctance the record business has had to embrace disco. Though some companies, like TK (KC and the Sunshine Band), RSO (the Bee Gees) and Casablanca (Donna Summer and the Village People), quickly latched on to disco and did extremely well with it, most of the record business preferred to promote "punk" music to its over-publicised and embarrassing demise in America.

The record companies did not just guess wrong. They wanted to see "punk" music succeed more than disco. CBS already

had a number of punk groups available to them in the United States through their British company, Warner Bros. caught up by making a deal to distribute Sire Records, which had the Talking Heads, the Ramones and other domestic American "punk" bands. Had "punk" turned out to be what disco has become, the two major American labels would have dominated the record business more than ever.

Disco does not lend itself to such monopolistic control. Like black rhythm and blues before it, it is the sound of the streets, and though records have to be promoted more than ever before, any disco song can catch on with the right sound. Names are less important than danceability; hype is less important than hep.

Discotheques are not particularly popular among record companies for other reasons, too. Their disc jockeys are known to splice tapes, adding bongos and other instruments to make the songs longer and more danceable. Records are hardly ever identified and so playing them is useless for encouraging sales. Besides, promotion people, used to the routine of radio stations, find discotheques a chaotic market where it would be easy to give away more records than their efforts could sell. And, unlike Europe, public performance in American clubs provides very little in the way of royalties and therefore very little inducement to garner air-play.

The real question is whether American radio will ever be the same again. For the past 30 years, the most popular station in any given area was the pop music station. It might not have been the most dignified or enlightening programme to listen to, but it was unique. It had its fast-talking, excited imitators in the off-shore pirate stations that forced the hand of the Government to allow commercial stations into Britain.

Their uniqueness lies in the breadth of sounds they encompass in one format. If people out there in radio-land buy Barbara Streisand and the Village People, then the station will play both. For the past 20 years there has been a symbiotic relationship between radio and record sales. The radio would not play outlandish

music; so such records were toned down or not produced. Still, the spectrum of sound far outreached the previous domination of radio by his band playing pretty melodies.

Tim Powell, the programme director of an American progressive radio station, sees disco and disco radio as a threat to "traditional" rock 'n' roll. He wonders whether the future of radio will be dominated by disco radio's concern with beats per minute. Disco records are measured this way. If all records end up being measured, percussion will ride the air waves as brass and strings once did.

It seems hardly likely that any given area could support more than one disco station since they would all end up sounding exactly alike. One station may beat out each pop music station, but the numbers listening to pop on all stations playing it far outweigh the numbers listening to the one disco station in town. On the other hand, before WKUT most people thought the average tolerance level for disco music would be fulfilled by a Bee Gees record played every half hour.

Except for the top 40 stations, the rock stations have avoided disco music altogether. Progressive radio in particular—has found disco anathema and described it in terms as harsh as "fascistic." They think it lacks the individuality of the progressive heroes like Bob Dylan, the tradition of folk music, and the prettiness of a lot of the female singers. Progressive stations did pick up on "punk" music and their eagerness to play it misled record companies into thinking they had found the new sound of the 1980s.

In a head-on clash, it is hard to tell what music will win. Progressive stations take together have more listeners than disco, but the wave of the future may sweep over the ageing defenders of the past. The battle seems to line up with the upper and lower classes listening to their disco music in fancy clubs and the street while the middle classes defend rock 'n' roll and their now dated progressive music in the warmth of their "dens" listening as their component speakers fill their lives with "meaningful" sound.



The Bee Gees

RUGBY BY PETER ROBBINS

Has J P R Williams had his day?

WALES AND FRANCE have dominated the home rugby scene for so long that the match between them almost invariably settles the championship.

Judged by the standards reached in the game in Paris both sides are still ahead of the other countries, although Wales more certainly are showing signs of the need for change.

France won narrowly, 14-13, a score that in no way mirrors the appreciable gap in attacking virtues. France could have won by a lot more had they taken the chances they created so cleverly, whereas Wales never really looked as though they would score anything but a scrambled try.

However, it was the finest match we have seen anywhere for a long time because it was full of venture and there were tremendous courage from both teams. Above all it was a game of dazzling speed, and in that particular aspect lay the main difference between the teams.

France had to make the same mobile, against such a craggy collection as Price, Windsor and Faulkner. Yet they also had to be unflinching in the forward exchanges, which reached a new intensity. France kept on their pace and did not shrink the forward commitment.

Rives is a comparative newcomer to captaincy, but his fanatical drive set the example for the rest, who followed obediently and sacrificially. If

ever one man influenced the course of the game it was he. He first destroyed Welsh movements and then created innumerable opportunities for his side. Joinel, also, had a marvellous game.

But it was the collective spirit to the breakdown and the exemplary setting up of the ruck that gave France so many opportunities.

Paparemborde and Rives stood away from the line-out to make the first breach. Vaguerin also punched through. But whoever it was there was a blue tide in their wake.

Plays

There were few chain movements by the forwards, but France's excellent regrouping inevitably brought in the Welsh back row.

To counter Martin, Clegg and Quinlan, France had a variety of plays at the line-out, but because they tapped poorly they largely negated their originality.

They had a hard time of it at the set, where Price frequently collapsed the scrum with impunity, and France also had difficulty in controlling the channelling of the ball, so that Gallion was caught several times by Holmes.

For all that Gallion was able to play with influence and variety. The same was true of Aguirre, who is now the finest full-back in the world. His line

kicking was long and accurate, but it was his making of the extra man in the quick three-quarter movements that gave France's attacks such piquancy.

Noves, France's left wing, also disconcerted Wales with some twisting counter-attacks, but the game was not won solely by attack.

Ruthless French tactics completely eliminated Wales' strongest asset, their counter-attack from broken play. Whenever a Welsh player went forward there was a blanket defence to make the tackle. This numerical advantage was essential to France's hopes.

The French did not have it all their own way, and they were never able to build up a substantial lead.

Wales forward discipline helped them to survive the onslaught of the first 20 minutes, but one had the distinct impression that they were playing on borrowed time. Wheel was missed for his strength in the mauls, but Martin almost compensated for his absence with a truly magnificent display.

Squire and Ringer both got through a tremendous amount of defensive work, but none of the Welsh back row had the time to involve themselves in the rare Welsh attacks.

For once the Welsh forwards were on the receiving end, and so the pattern of the team's normal play was utterly disrupted. What should have been

a preparatory phase, in fact became a perpetual rearguard action.

Sad for J.J?

Even the Welsh tactic of wheeling the scrum to get at Gallion finally came unstuck. The Welsh forwards had all the right reflexes but as a unit they were that much slower.

Holmes, therefore, did not have the options that Gallion did. He made the best use of what he had. Arguments were raging late into the night about Holmes's pass, and, true, it is a little slow. It is, also, long.

But not many scrum-halves could have taken the battering that Holmes did against the big French forwards and still bounced back. His was a game of outstanding courage.

Nor is their Welsh concern at fly-half, where Davies kicked well except for the restarts.

The main worry must be, first, in the inability of the Welsh backs to attack at speed, and secondly, in the wayward manner both Rees and J.J. Williams aligned themselves in defence. There was utter panic when the ball went to Gourdon, on the right, and it was he who scored France's first try.

It seems likely that J. J. Williams will go and, although it may sound blasphemous even to hint at it, J. P. R. Williams's time is drawing near.

Switch

Mr. Mahon is angry about the Government's proposal to end the "in lieu" provisions, the practice whereby collectors can offer works of art to the Government in lieu of capital transfer tax.

Under the new system, drawn up by the Treasury, an owner will be responsible himself for the sale of his artistic holdings and his executors will pay in the normal way.

This is considered a simplified system by the Treasury but is disliked in the art world because it tilts the balance away from the intrinsic value of pictures in favour of the purely financial consideration of how much they can make in the salerooms.

It also presents the danger of important pictures going abroad to be sold.

Some people also feel that the new provisions will favour major national collections, if paintings

stay here, at the expense of poorer provincial galleries.

Mr. Mahon said, "The outlook of the old system was essentially that works of art had a validity in themselves, but the new provisions change the basis of that entirely and make it purely financial."

"In that case, include me out. There is more to art than just money. But if they want it that way I will render unto Caesar the things that are Caesar's."

He intended to change his will, at present in favour of the bulk of the collection remaining in Britain. Now, if the proposals became law, his executors would be instructed to sell the pictures abroad after his death to raise the maximum amount they can for the Treasury.

"I just wanted them to be acquired as painlessly as possible by the nation but there comes a point where one has to take a firm stand on a matter of principle. It is something of great importance to me."

Mr. Hugh Leggart, secretary of the pressure group Heritage in

Angry collector will sell abroad

BY MICHAEL DIXON, EDUCATION CORRESPONDENT

THE GOVERNMENT'S scheme to make students' unions more accountable for their £15m income from taxpayers' funds enters a new stage of negotiations in London today.

The Education Department, local authorities, university vice-chancellors and the National Union of Students will meet to discuss a plan to end the automatic State payment of fees ranging from £50 a student in some university unions to 50p a head in small colleges.

The Government's scheme is for a minimum of about £15 a head to be paid through local education authorities, leaving each student union to negotiate extra finance from the budget of its university, polytechnic or college.

The National Union of Students terms the plan a "recipe for annual turmoil." It fears that local unions will fare badly in competing for funds with other institutional interests, including those of

More talks today on plan for student fees change

academic staff. The union wants a national and local organisation in which it can join other groups in specifying how much each local union should receive.

'Sex bias' in airline's job offer

A HOLIDAY airline's hunt for a top executive was "tainted" by sex discrimination, an industrial tribunal has ruled. Former RAF navigator Mr. Edward Gorman, Britannia Airways personnel controller, was so anxious to pick a man for the job that his attitude was a deterrent to women applicants, it said.

In a ruling yesterday the tribunal criticised the description for the £5,000-a-year post of personnel manager because it specified "male desirable."

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Changing the House

THE HOUSE OF Commons today begins a two day debate on its own procedure. The starting point is the Report from the Select Committee on Procedure produced as long ago as last August, the delay in holding the debate being itself a comment on what the Government thinks of Select Committees. It is unlikely that there will be a vote at the end and there is almost certainly no time left for this Government to do anything about reform, even if it wished to try. Yet the debate is important, none the less.

Broad spectrum

The Procedure Committee would never have been set up if there had not been fairly widespread dissatisfaction among back bench MPs, let alone outside the House, about the way Parliament is run. Its terms of reference were limited to considering the practice and procedure of the House in relation to public business, and to making recommendations for "the more effective performance of its functions." It could not therefore go into wider questions of constitutional change. But its membership embraced a remarkably broad spectrum—from Miss Jo Richardson of the Labour Party to Mr. Nicholas Ridley on the Tory right—and included Mr. Enoch Powell, sometimes regarded as the most accomplished Parliamentarian of the day. The chairman was the intellectually distinguished Labour MP, Sir Thomas Williams. The Committee's report is thus probably the best statement we have about what the House thinks of its own workings.

Deference

Its basic recommendation is for the extension of the Committee system so that every major government department is watched by a Parliamentary committee. In the long run, the report says, "the departmentally-related committees may well become the eyes and ears of the House in relation to Government departments, drawing the attention of Members to matters which require further political consideration and providing Members with advice and informed comment which can nourish the work of the House in scrutinising and criticising the activities and proposals of the Executive." That, at least, is the ideal.

One does not have to approve

of the recommendations in their entirety in order to applaud the objective. The present committee system in the House of Commons is almost wholly random. It is unclear, for example, why there should be a committee on overseas aid but not on agriculture or education. In fact, committees on both those latter subjects have been tried but abandoned because it was too difficult to establish a *modus vivendi* between the MPs and the departments concerned. That should never have been allowed to happen.

Equally, where committees do exist, their purpose is not always obvious. There are doubts about how far they can demand evidence. There are limits to the ways in which they can call on outside advice and their reports frequently go unnoticed by the House of Commons as a whole. It is also the case that existing committees do not always make the most of the opportunities that are available to them. Too often they fail to ask the right questions and, even where some information is elicited, they fail to follow it up. There is just a touch of undue deference to the Ministers and senior civil servants who agree to come along.

Quality

The Procedure Committee recommends dealing with some of these problems by integrating the Committees more into the Parliamentary system. Not only should there be more such bodies, but they should have more powers. They should be allowed to take on outside advisers and pay them. There should be established ways of ensuring a debate on the committees' findings in the full House.

It is quite likely that such reforms, if implemented, would be beneficial, though one also has to remember that the effectiveness of any committee depends more on the quality of its membership than in the particular procedure. There may be better and more comprehensive ways of improving the performance of the House of Commons. Yet, in the end, the House can only reform itself. It cannot do so from outside and these are the only proposals we have. The importance of the two day debate will be in revealing what the House as a whole thinks about its own workings.

Testing French steel

THE PROBLEMS of the French steel industry, now causing serious labour unrest in the Lorraine and Nord regions, are by no means unique. Other West European countries, most notably Britain and West Germany, have had to grapple with similar crises and in France itself the ailing textile industry has set a gloomy precedent. Indeed, the international nature of the adjustment problem has been repeatedly stressed by the French Government in its bid to win acceptance for its rationalisation plans.

Local impact

Other points of the Government's case also sound familiar. The steel industry, indeed French industry as a whole, it says, cannot remain competitive in today's changed international economic circumstances without major surgery. It is a point of view held all the more strongly in the light of the new policies of "economic liberalism" that are being so actively pursued by M. Raymond Barre, the Prime Minister. While accepting that its plan to close steel plants will cause short-term hardship, the Government maintains that the long-term consequences will be more, not less employment. Besides, Paris points out, prospects for overall growth, investment and industrial output are all now looking up.

All that may well be true. It is not, however, the sort of reasoning likely to impress people about to lose their jobs in areas in which there is at the moment virtually no other employment. The local concentration of the 23,000 jobs at stake—7,000 of them, in the small steel town of Longwy—has exacerbated the impact. As last Friday's 24 hour stoppage showed, feelings are running extremely high and there seems little doubt that the Government, at least initially, underestimated the bitterness that its plans would cause. Its attitude has appeared detached and overconfident.

Sovereignty

The dangers are all the greater in that while the problems of the steel industry are common to many countries, the nature of protests in France is not. Violent street demonstrations are part of the country's

deep-seated traditions, and mass protests, usually quickly initiated by extremists, are always potentially explosive.

The signs are that the Government is now increasingly aware of the need to defuse the situation. Talks have been arranged with the unions and fresh measures, including earlier retirements and temporary alternative employment, have been offered to cushion the cuts. In addition, President Giscard d'Estaing is making a special effort to attract Ford's new European plant to Lorraine. The Government is already aware that it would be a major feather in his cap.

A solution is all the more urgent in that the steel crisis has erupted at a time when M. Giscard d'Estaing is under fire from his political enemies on a number of other fronts. For the Left, the steel rundown is further proof that the Government is deliberately favouring private enterprise at the expense of the public sector. The Gaullists, under M. Jacques Chirac the President's nominal allies, have been losing no opportunity of adding to his political difficulties and are now pressing him to reflate in order to create more jobs. Once again, both Gaullists and Communists are playing the card of national sovereignty stoking the fires of chauvinism with allegations that the steel crisis is all the fault of the Germans, the European Community or both.

Six months

M. Giscard d'Estaing still has time on his side. The Presidential election is not until 1981. For the moment, he is confident that direct elections will strengthen his power base by showing massive support for his "European" policies in preference to the increasingly nationalistic attitude of the Communists and Gaullists. The three years that M. Barre gave himself to put the economy right still have six months to run. If he has not yet totally succeeded, he has at least some progress to show. His decision to let prices find their own levels, for instance, has not led to the feared inflationary upsurge. The crisis in the steel industry will certainly need careful handling, but it has not yet disproved all the assumptions underlying the Government's economic policies.

CHINA HAS taken an enormous gamble in Vietnam, risking at one and the same time that the Russians will be tempted to retaliate, and that the West will allow its new friendship with Peking to cool. China calls its incursion no more than simply a punitive strike, announcing that Chinese troops do not intend to occupy Vietnamese territory. But a deliberate move of this sort will confirm the worst "yellow peril" fears of the Soviet Union.

Military intervention of this kind has not been characteristic of the Chinese in recent years. In 1978 they began sabre-rattling over the issue of the Senkaku Islands in the East China Sea, whose ownership they dispute with Japan. But in spite of the important oil potential of these tiny reefs, they backed away from trouble to ensure the signature of their long-term trade agreement and treaty of friendship with Tokyo. In 1974, while North Vietnam was preoccupied with its war against the South, the Chinese swooped on the Paracels, a small group of islands off Vietnam but claimed by China. They too are important for offshore oil.

Their only previous large scale military action since the invasion of Tibet and the Korean war was against India in 1962, over disputed border territory. So successful was that lightning strike that New Delhi lost face throughout Asia and its military machine had to be completely overhauled, a precedent which the present Chinese high command may well have had in mind.

Imperial Chinese rulers who occupied Vietnam for 1,000 years and made repeated attempts to annex Vietnam in the last 900 years have been replaced by a Communist Party, but in Vietnamese eyes the Chinese of yesterday are no different from the Chinese of today. Seen from Hanoi—where major historical sights include temples dedicated to the national heroes who fought against Chinese invasions—the Chinese incursion must seem like just another episode in a historic conflict.

In fact over the last two months Hanoi's domestic propaganda has stressed this continuity of history to explain the conflict as well as to boost the country's morale. Time and again in the past, the propagandists said, the Vietnamese led by the legendary Trung sisters, Ly Thuong Kiet and Le Loi have defeated enormous superior Chinese invaders. Similarly the Vietnamese people under the "correct leadership" of the Vietnamese Communist Party would certainly defeat new Chinese attempts to dominate Vietnam.

This simplistic historical explanation, however, only touches a part of the conflict. During the Vietnam war involving the Americans, Hanoi's relations with China were claimed

The full reaction by the Soviet Union remains to be seen, but Moscow is bound by the Treaty of Friendship with Vietnam, signed last summer, which includes a clause on defence. In any case, while the Russians might well want to avoid actual fighting, they cannot be seen to be failing to support an ally in an area where rivalry between Moscow and Peking is already intense. There are hundreds of Soviet military advisers in Vietnam, and four Soviet warships off the Vietnamese coast were recently joined by a missile cruiser and other vessels.

Confrontation between Russia and China cannot be ruled out. Analysts have predicted some kind of action along the Sino-Soviet border, possibly in Xinjiang (Sinkiang) to distract the Chinese. The Russians have 44 divisions there, with something like 650,000 men in a state of readiness. While Chinese numbers may approach these, their equipment is obsolete, lacking modern anti-tank weapons and helicopters.

In these conditions the Russians must be sorely tempted to teach the Chinese a lesson, particularly when they see Chinese leaders like Vice-Premier Deng Xiaoping (Teng Hsiao-ping) constantly accusing them of constituting the world's biggest threat to peace. Even a minor incident in the present fevered atmosphere could flare up alarmingly. In mid-January the Chinese created a new military administrative area in Xinjiang, and have withdrawn civilians from the border areas.

so although they are outgunned by the Russians they are certainly not unprepared.

The Chinese have imperilled their new relationship with the West by rousing latent anxieties, some of them very recently lulled into tranquillity. The process of normalisation of relations with the U.S. is based on a degree of American trust that Peking will not attack Taiwan. While that would be far more difficult militarily than the present action in Vietnam, because of the 120 miles of sea between Taiwan and the mainland, the Vietnam strike brings the question of Peking's long-term intentions into the foreground.

Cold water on new warmth

The Chinese move will certainly pour cold water on the new warmth between Chinese and Americans that Vice-Premier Deng's recent visit to the U.S. engendered. While President Carter at no time endorsed the Vice-Premier's constant warnings about the threat of war from the Soviet Union and maintained constantly the need to sign a new Strategic Arms Limitation Agreement with Moscow, the visit did produce a Sino-American bonhomie which must now have been rudely disturbed. The President has pursued a scrupulously even-handed policy in what he has said about both Moscow and Peking, by criticising the Vietnamese invasion of

Cambodia at the same time as the Chinese action in Vietnam. But even liberal congressmen, many of whom are already worried about leaving Taiwan without a U.S. defence umbrella, will see the Chinese move as confirmation of their deepest suspicions of Peking. That could cause delays in setting up the new informal links between Washington and Taiwan, and worse delays, particularly if the sudden strike turns into a simmering border war, to legislation benefiting trade and contacts with China.

Nor is the incursion an auspicious curtain-raiser to the visit of the British Industry Secretary, Mr. Eric Varley, to Peking next week. He hopes to sign not merely a series of agreements for the sale of industrial equipment but also the controversial contract for 70-100 Hawker Harrier vertical take-off fighters.

While the Harrier is generally accepted as a mainly defensive weapons system and an old one at that (since the Chinese are due to get the mid-1960s version), the Soviet Union has already shown itself highly sensitive to any sale of western weapons to Peking. The Chinese are pressing hard for other military equipment, but even if the Harrier goes through because it is tied to large industrial deals already in the pipeline, the atmosphere in which to sell further items could become less favourable. Even China's plan for purchasing western civilian technology could run into trouble if the conflict in Vietnam escalates. The Chinese intention appears

to be a swift surgical strike against Vietnamese border posts and towns, taking only a few days. However, given the hilly country of the border area and the immense experience of the Vietnamese and their much superior fire power, the Chinese move could go badly wrong. The Chinese are inexperienced in modern warfare and while one denies their guerrilla capacities this type of attack is much more than a commando raid. It remains to be seen whether they have the requisite transport, arms, and air cover. If they do not, they are likely to get stuck in continual border warfare.

In the past month the Chinese have built up their forces along the Vietnam border to something like 100,000 men, installed a new commando with Korean war experience and, according to Hong Kong reports, moved about a third of their fighter aircraft strength to the area. These troops have been reinforced by units not from China's northern borders, but from Fujian Province, opposite Taiwan.

Most of the Vietnamese army is at present supporting the new leadership of Heng Samrin in the Cambodian capital, Phnom Penh. It was set up early this year after Cambodian rebel forces, strongly supported by the Vietnamese, had invaded and expelled the previous Pol Pot leadership. Pol Pot men took to the mountains in the south-west, where they are apparently maintaining a strong rearguard guerrilla action with Chinese support.

The guerrillas are giving the new Cambodian Government

much more trouble than was expected. While Heng Samrin seems to control the towns, the countryside still remains partly in doubt and the Chinese have promised to continue aid. The Pol Pot Government was unpopular, but feeling against the traditional enemy, the Vietnamese, is strong enough in Cambodia to give the guerrillas some advantage, and they seem to have some future as a possible rallying point for Cambodian nationalism. With the Vietnamese tied down in Cambodia, the Chinese have picked a good moment for their own retaliatory action.

But in broader terms Chinese policy in South-east Asia has been counter-productive, fanning existing historical antipathies. Among the countries of South-east Asia, the image of China as a peace-loving neighbour will have taken a hard knock. China is trying to convince these countries of the mutual advantages of expanded trade and contact.

Although it may not be difficult to see why the Chinese decided on a superficial level it was timely for them to take a swipe at Vietnam, they have clearly made an enormous gamble. One has to assume that either they have not thought the issue through or that they thought the gamble worth all the inherent risks. For the risks are great. It has taken the Chinese 17 years to mend their relations with India after their 1962 strike; 17 years of future hostility between China and Vietnam would make the area a dangerously fertile trouble spot indeed.

Colina McDougall

As seen in Moscow and Hong Kong

IMPERIAL CHINESE rulers who occupied Vietnam for 1,000 years and made repeated attempts to annex Vietnam in the last 900 years have been replaced by a Communist Party, but in Vietnamese eyes the Chinese of yesterday are no different from the Chinese of today. Seen from Hanoi—where major historical sights include temples dedicated to the national heroes who fought against Chinese invasions—the Chinese incursion must seem like just another episode in a historic conflict.

In fact over the last two months Hanoi's domestic propaganda has stressed this continuity of history to explain the conflict as well as to boost the country's morale. Time and again in the past, the propagandists said, the Vietnamese led by the legendary Trung sisters, Ly Thuong Kiet and Le Loi have defeated enormous superior Chinese invaders. Similarly the Vietnamese people under the "correct leadership" of the Vietnamese Communist Party would certainly defeat new Chinese attempts to dominate Vietnam.

This simplistic historical explanation, however, only touches a part of the conflict. During the Vietnam war involving the Americans, Hanoi's relations with China were claimed

to be as close as "lips and teeth" for the simple reason that for Vietnam China was the major supplier of arms, and for Peking a Vietnam fighting the U.S. was a major bulwark.

With the beginning of ping pong diplomacy and the Sino-U.S. détente there was a dramatic change in relations between the two Communist nations in Asia, although it did not become apparent until the end of the Vietnam war in 1975. Then victorious Vietnam with its powerful army and an ambition to dominate the whole of Indochina turned into a major rival on China's southern flank. The fact that the Soviet Union was willing to back Vietnam's vanguard role in southeast Asia made Vietnam into all the more dangerous a neighbour for the Chinese.

Conflict between Peking and Hanoi reached crisis point when in 1978 the Chinese launched their January 1978 invasion and their Khmer allies ousted the Pol Pot regime from Phnom Penh and seemed to achieve the goal of a Hanoi-dominated Indo China.

Hanoi felt sure that Peking would not go to war with Vietnam for the defence of the universally condemned Pol Pot regime. Besides the Vietnamese calculated that China was too heavily committed to its modernisation to risk an armed

conflict with Vietnam. Hanoi also felt that despite the numerical superiority of the Chinese army, it is a flabby and poor fighting force led by old generals whose most recent experience of full scale war was in Korea in the 1950s.

The Vietnamese also felt confident about the sophisticated tanks, aircraft and missiles they possess compared with China's largely antiquated equipment. The Chinese incursion across Vietnam's border has disproved part of these calculations. Coming days will show how well founded is Vietnam's feeling of military superiority.

Many observers feel that the initial Chinese advance might turn into a very costly operation if the Vietnamese cut the path of the Chinese retreat through mountain passes by outflanking movements of their regular units and massive use of air strikes.

Nyan Chanda

THE SOVIET promise to honour obligations under the Friendship Treaty with Vietnam does not mean that the Soviets will attack China. There is little doubt, however, that the situation is escalating dangerously.

The Friendship Treaty obliges the parties to consult in the event of a threat or attack

against one of them with a view to removing this threat.

This is not the same level of commitment as exists for an attack on a Warsaw Pact country, which is taken as an attack on the Soviet Union itself, but in the face of a direct appeal for help the Soviet Union from Vietnam, the Treaty is certain to necessitate Soviet counter action of some kind.

The best hope for limiting the Soviet reaction is an end to the Chinese incursion before the Soviets have time to organise a military response. The Soviets probably feel obliged to take action against China but their responsibility will be lighter if Chinese troops have left Vietnamese territory within a few days.

Under those circumstances, the worst the Soviets might do would be to investigate a few border incidents. The rivers which divide the Soviet Union and China are full of disputed islands and with 44 Soviet divisions along the frontier there is no shortage of opportunities for creating incidents.

Soviet analysts believe the Chinese have no intention of occupying areas of Vietnam indefinitely and the Chinese invasion of India in 1962, in which the Chinese occupied territory for six weeks before withdrawing, has been cited by Soviet and Western analysts

as being the relevant precedent for the punitive attack on Vietnam.

The danger in the present situation, however, is that the Chinese could get bogged down in fierce fighting in Vietnam and that the pressure of events could draw all three countries into applying ever greater measures of force, not excluding, in the extreme case, a Soviet incursion into the Chinese province of Sinkiang.

The Soviets do not want to upset their relations with the U.S. or the chances of conclusion and ratification of a new Strategic Arms Limitation Agreement. They also have as much reason as any country to fear a long ground war in Asia. But Soviet fear of China is historically rooted. This has been exacerbated by the success of the present Chinese leadership in courting Yugoslavia and Romania, the peace treaty with Japan and the establishment of diplomatic relations with the U.S.

Just as the Chinese apparently feel the need to teach Vietnam a lesson over Cambodia, the Russians would almost certainly like to teach China a lesson over Vietnam particularly now while China is comparatively weak.

As the Soviet leadership considers its options, the potential seriousness of the situation has

been grasped by many Soviet citizens in Moscow. They are hoping that the situation will be brought under control.

A top Soviet official on Chinese affairs, in an interview with the Financial Times two weeks ago, emphasised that the Soviet Union considers its Friendship Treaty with Vietnam as a political not a military treaty. Clause Six, however, calls for consultations in the event of any attack on either side.

He also underlined that the Soviet Union did not think that China would risk all out war with Vietnam. "Experience shows that one has to fight Vietnam seriously or not at all. This would require China to throw 2m. or 3m. troops into Vietnam. Not only would they be foolish to start but war would also divert badly needed resources needed for the four modernisations and would damage Chinese reputation in the world at a time when it needs an attractive image."

In spite of this, however, the official made clear that the Soviet Union and its ally Vietnam expected China to concentrate troops and he added that "irritating conflicts along the Vietnam frontier were possible."

David Satter
Anthony Robinson

MEN AND MATTERS

The old block about new chips

If there is one attitude which many British company directors share with trade union leaders, it is a deep suspicion of the silicon chip. A high-powered study is about to start, investigating why some industries still fight shy of seeking ways to use micro-electronics.

Sir Charles Carter is the driving force behind the study. He is chairman of the research and management committee at the Policy Studies Institute and two years ago headed the controversial inquiry that urged—in pursuit of technological efficiency—the dividing up of the Post Office.

Carter tells me that the new investigation, costing upwards of £100,000, will not depend upon government funding. "Governments tend to attach conditions to their money. We

shall be seeking answers to some questions they may not want asked."

The Policy Studies Institute will not concern itself with the social impact of micro-processors. Carter says there is enough research going on already into the effects upon employment and styles of work.

In immediate control of the study will be James Northcote, a senior fellow at the institute. "But this is not going to be a piece of academic research," says Carter, formerly Lancaster University's vice-chancellor. "It is a very urgent matter indeed. We must find out why British firms do not move as quickly as foreign rivals in the acceptance of new ideas."

Carter has a perspective on the problem: 20 years ago he was co-author of a report on innovation in British industry. "Since then, things have gone no better. If a sector of industry was behind then, it is further behind now."

Is it not true, I asked, that we have always been uniquely clever at inventing things, but poor at implementing them. "Quite a few other countries like to see themselves in that way," said Carter drily.

Open house

On the principle, it seems, that every home should have one, the Open University will be soliciting for students at the forthcoming Ideal Home Exhibition. The idea of having a stand—to explain the university to visitors in search of the latest mod. con.—is something completely new.

"We are not quite sure what we are letting ourselves in for," admitted a busy spokeswoman at the OU's London region headquarters. "It is a public relation at the exhibition what they can do at home."

was chided by the Comptroller and Auditor-General for laxness in its financial affairs.

All at sea

A Malta conference, costing about £1m, has run into a storm over the amount the host country is willing to pay its own staff. The dispute has provoked so much domestic acrimony that Premier Dom Mintoff has dismissed the man appointed by the 35 nations involved to run the proceedings.

The ousted executive secretary, Chevalier Paul Naudi, is a permanent secretary in the island's administration. He is now so enraged that he is threatening to "expose" Mintoff's style of running Malta at a news conference in Brussels.

The gathering is designed to promote cultural, economic and scientific ties in the Mediterranean region. But so far, Naudi's dismissal has only been the prelude to quarrels over the status of North African states invited to the get-together. The Soviet Union demands that they should only be observers; Mintoff insists they should be full members.

All in all, Malta's lavish outlay on plans to present itself as the new magnet for international conferences is off to a tricky start.

Past discounted

When Union Discount moves back this morning into its Cornhill home—after a £5m four-year refurbishment—it will be "saying goodbye to the quill pen era." Hardly surprising, you might think, for a company whose daily "pluses and minuses" are around £500m.

But the discount houses have had a fondness for the old ways. Richard Petherbridge, senior

managing director at Union, explains that it is a basic revolution to introduce video terminals into their operations. "The market has changed tremendously in the past five years," he says. "So we are keeping up with the game."

Despite computerisation, with the "position keeper" using a keyboard instead of a pen, and TV cameras relaying the position in the book, Petherbridge does not hide his attachment to Union's past; he joined the company more than 30 years ago, straight from school.

Taking and paying

Sir Keith Joseph's favourite proverb is Polish, so he says. This is how it goes: "Take what you like," said God. "Take it and pay for it." Intriguingly enough, it is also the favourite quotation of Mrs. Shirley Williams, the Education Minister—only she claims it is Spanish.

Both of them supplied the proverb to a book of sayings issued some years ago for charity and is still going the rounds. A reader has asked me whether, in view of its topicality, one or other might not like to put it forward as a General Election slogan for their respective parties.

Chivalry restrained me from teasing Shirley Williams with such a question. Joseph replied: "I think it is really more suited for reflective speeches than as part of a manifesto." Was it Polish or Spanish? "Proverbs tend to encapsulate truths which are widely perceived," he responded sententiously.

Brotherly advice

This pungent piece of graffiti has been reported from a Birmingham factory: "More haste, less overtime."

Observer

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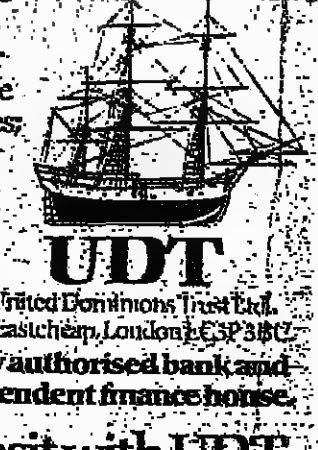
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FINANCIAL TIMES SURVEY

Monday February 19 1979

Networks
making
a big
impact

By Max Wilkinson

THE POLITICAL mind, confronted with the idea that computer networks can be a substitute for roads, is likely to experience an understandable giddiness.

However, it is a serious idea which is being put forward increasingly by analysts of computer technology; and it is not particularly visionary. The Americans have even coined a portmanteau word for this fusion of computing and communications technology, "comunications," which would have delighted Lewis Carroll. The term is perhaps too odd to survive in Europe, but the ideas behind it are taking root fast. The fusion is, indeed, expected to bring revolutionary changes in the way people do business within a few years.

A major report on data processing published last year by the French Government ("L'Informatisation de la société") coined its own special term *telematique* to describe the phenomenon.

In Britain, however, the political discovery of the micro-processor and its potential significance has tended to divert public attention from this other trend which, in the long term, could have a much more profound significance—the development of cheap communications between cheap computers. Certainly the production of mass-produced micro-electronic circuits will be one of the major elements causing the reduction of costs, but even the most complex of these miniature circuits will be only the building blocks of much more impressive structures.

By itself the idea of wiring up computers to enable them to communicate with each other is not novel. The importance lies

in the reduction of costs which will put the equipment and services within the scope of a wide range of businesses. Indeed, computer networks are already beginning to change business practices and to make their impact on society as a whole. Indeed, Mr. James Martin, a former IBM engineer, and now one of the best known writers on computer networks, points out in his book "The Wired Society" that the acceptance of computer networks will depend to a considerable extent on the price of oil.

Exchange

The reason is that a large proportion of the world's consumption of petroleum is used in transporting people who simply want to exchange information. Much of this communication could be delivered, in one way or another, in the form of computer data, particularly where face-to-face confrontation is not essential. Executives often have to travel to a particular office merely to gain access to files, for example. If the files were all stored on a computer network which could be inspected through the telephone system, travelling could be reduced and meetings of a routine character cut down.

Already in the U.S. the networks for carrying computer

data, particularly Telenet, are posing a challenge to the physical transport of surface mail, since large sections of business communications can be put in the form of computer data and shifted around the country quickly and cheaply.

Competition will be intensified by the new satellite services, particularly the U.S. satellite Business Systems network which is jointly owned by IBM, Comsat and Aetna Casualty and Surety. It has received a licence from the Federal Communications Commission to offer leased data communications channels over the U.S. continent starting in 1981. This venture and others projected by companies such as Xerox and ITT have important implications for the whole communications and computing industry in the U.S. and in the rest of the world.

M. Simon Nora and M. Alain Minc, authors of "L'Informatisation de la société" comment: "Their power and universality, accessibility and transmission range will make communications satellites the 'imperial highways' of the future. If IBM dominated satellite transmissions, the company would transcend the role of a mere manufacturer; willingly or unwittingly, it would participate in world government. It has everything to become one of the great

world regulatory agencies."

By the mid-1980s a new generation of much more powerful satellites is likely to be available, capable of transmitting television programmes direct to rooftop receiving dishes across large sections of the world. These big satellites could just as easily be used for sending vast quantities of data which could be received in a similar way. Since any large company could easily put up a receiving antenna, the system poses a significant threat to the current monopolies of all the present telecommunications authorities (PTTs) in Europe as well as in the U.S.

Consequence

The expected consequence is that data communications will become much cheaper. The analysts of SBS Publishing, of San José, California, for example, predict that the cost of digital communications will be reduced by a factor of 10 in the second half of the 1980s. At the same time local links will be greatly improved by the use of modern high-capacity lines including optical fibres (hair-thin threads of glass which carry information in the form of a high-intensity pulsating light).

The advantages of trans-

continental and transatlantic satellite links clearly will be seized first by the larger multinational companies, which will use them as main arteries for internal communication. However, the same principles apply to systems used by much smaller companies for a computer network all in one building can function in just the same way as if each of the different machines were thousands of miles apart. The main point is that networks are becoming more important than machines.

The reason is that the continual fall in the cost of computing (at about 20 to 30 per cent a year) is making the economics of small local processors increasingly attractive. This is a reversal of the trend of the 1960s when all computing functions tended to be concentrated in a single department based on a relatively expensive large computer.

To cope with many different types of computing task, a batch system was used. For example, all payroll accounts would be processed together, at a particular time in the week. Other batches of work would be processed, all in regular order. The result was a rather cumbersome series of systems for entering and organising data to suit the convenience of the computer's schedule.

Batch processing is still commonly used, especially in large computer installations, but it has often put considerable strain on company organisation. It is therefore tending to be replaced by inherently more flexible systems of "real time" or "on line" processing. The difference is that in a real time system new data can be entered into any of the computer files at any moment instead of having to queue up until the next relevant batch is being fed into the machine. Similarly, any of the files can be inspected at any time by means of a number of different terminals all operating simultaneously. The best known example of real time computing is the airline booking system, which carries an always up-to-date list of available seats. The control computer files can be altered and reviewed by hundreds of different terminals in booking offices all over the world. The airline system is therefore an example of a distributed network which depends upon extensive data communications for one of its main functions. Similar systems are used in banking and many other businesses which depend on the transmission of detailed up-to-the-minute data.

In the next decade many much smaller companies will

start to use such systems as they become cheaper to use.

One clear implication for the \$30bn world computer industry is that the emphasis of the market will continue to shift from large machines to terminals (particularly so-called "intelligent terminals" which include some computing power) and towards small communicating computers.

Already peripherals (including magnetic memory storage) and terminals account for nearly 45 per cent of the industry's sales, and represent twice as much as all the sales of large mainframe computers. Sales of mainframes themselves represent only about a quarter of the industry's total revenues, a proportion which will almost certainly decline in the next ten years.

The traditional distinctions between mainframe computers, mini computers, terminals and micro-computers are, in any case, becoming more misleading than helpful. The point can be illustrated by a forecast from Diebold Research that by 1990 a computer processor will be available which has 25 times the power of an IBM 370/168, (one of the largest) but costs only the same amount. Or to put it another way, small terminals will be able to include the same power as one of today's larger

computers at only a very small extra cost.

The clear implication is that computing devices will become extremely widespread and, paradoxically, unimportant. The mere processing of data will be taken for granted, because it will become a cheap and widely distributed part of a system. Much more importance will be attached to the characteristics and purposes of the networks communications links and the terminals used to gain access to them.

Emphasis

The emphasis on intelligent terminals can be seen from the fact that the world's largest civilian computing network, the General Electric GEISCO service, has recently offered intelligent terminals to its customers. Even though the network of 150 large computers linked by satellite is more than capable of carrying out any processing required by the customer, it has been found that many tasks can be performed more economically by a small local processor.

More complicated processing, which might involve data stored on different sides of the Atlantic, would, however, be performed by the GEISCO Mark 3 service which the local processor can plug into using an ordinary telephone connection.

Local terminals in more general networks will not merely carry out processing on their own they will also carry out the important task of compressing text into the pulses of computer language. When so compressed the text can be sent, perhaps at night, to a similar machine. This will store the electronic information in the blink of an eye and then type it out at leisure.

Such "electronic mail" requires a computer network's communications, but uses only a minimum of computation.

This kind of application is predicted to grow rapidly, if only because companies already use computers for their more complicated data processing needs. The challenge of the next few years is therefore to make computer systems "friendly" and easy to use in order to spread cheaper and cheaper machines across ever-widening markets. And to prepare for the day when computers in some form or other will be as common as telephones.

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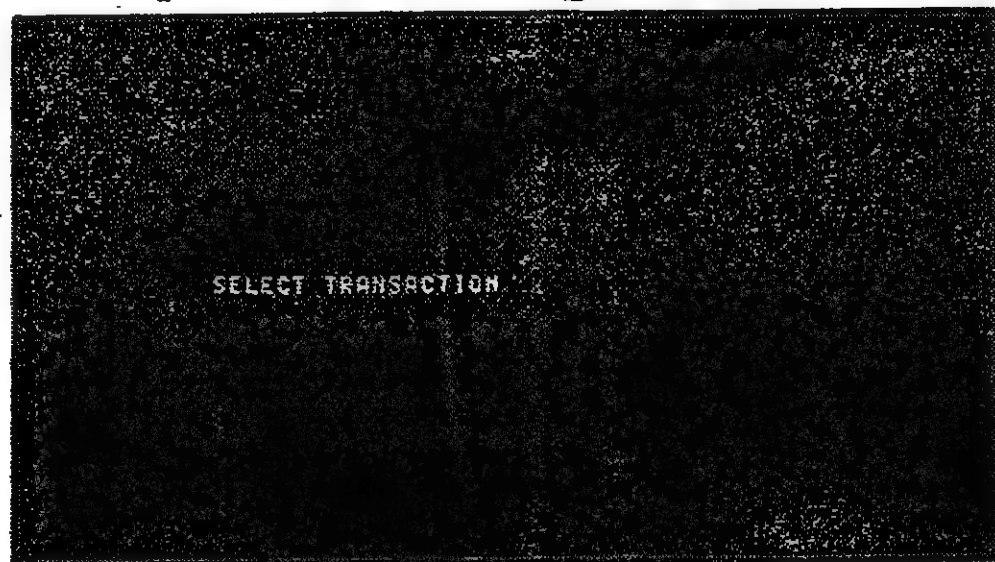
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One of the Olivetti distributed processing systems is the TC800, an intelligent modular terminal system with a difference.

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All of which has already made the TC800 the ideal intelligent terminal system for finance, government and industry.

Olivetti has installed throughout the world over 80,000 terminals and 180,000 systems for data and word processing applications, over 165,000 teleprinters and 330,000 accounting machines.



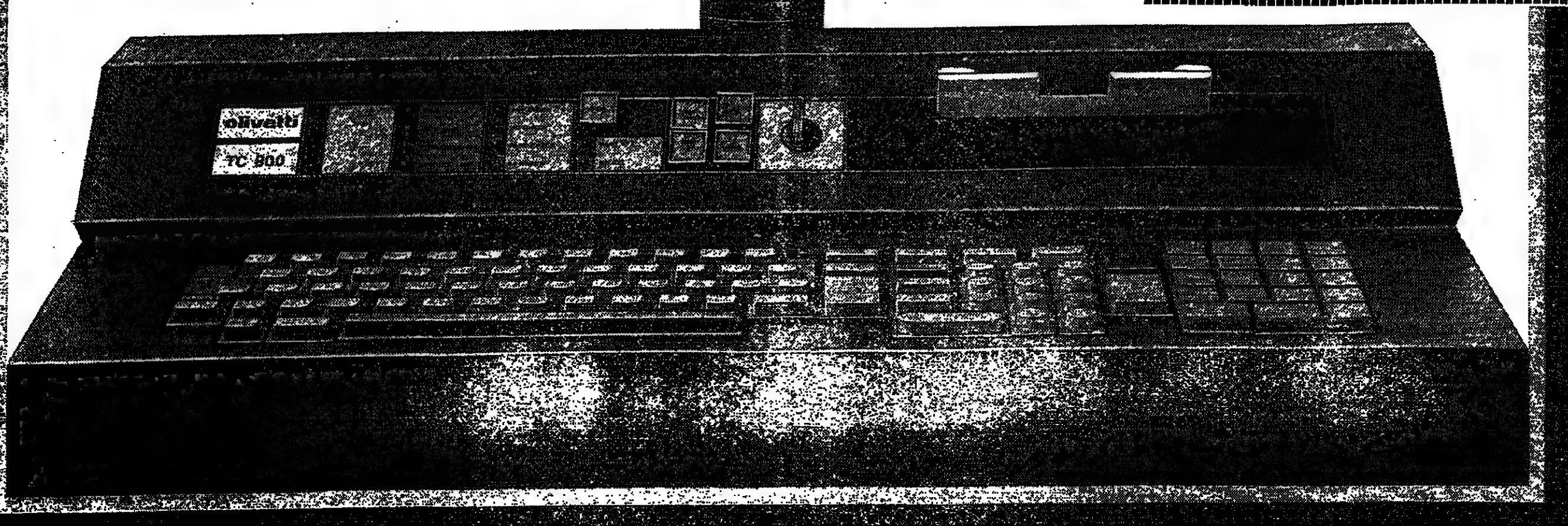
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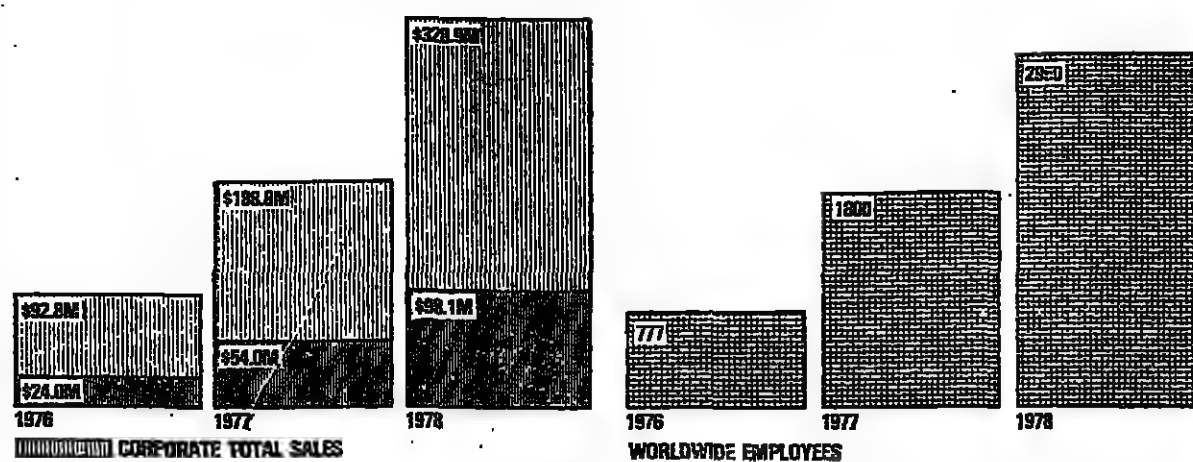
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The top names and their rating

REVENUE INCREASES

The "big seven" computer companies, figures in \$m.

	1976	1977
IBM	12,717	14,765
Burroughs	1,830	1,844
NCR	1,390	1,574
Control Data	1,331	1,511
Sperry Univac	1,430	1,472
Digital	736	1,059
Honeywell	914	1,037

Source: Datamation.

TALKING ABOUT company fortunes leads inevitably into the numbers game, and since the computer industry is the one which throws up the most startling numbers, the game becomes that more incredible in its results.

Take, for instance, the case of Storage Technology Corporation (STC), a stratosphere high-flyer whose 1978 turnover was 110 per cent up at \$220m with profits up 135 per cent at \$26.8m.

Company leaders talk confidently of "overtaking IBM sometime soon." And, indeed, consulting any fairly advanced business calculator shows that on present performance STC should overtake IBM, with its \$20bn turnover and better than 14 per cent growth, in about seven years' time. STC's president has said the company's accelerated growth will continue well into the 1980s. ... but to that extent?

Every management committee has to operate on projections of many kinds to steer company fortunes, and one of the most difficult tasks must be selecting, and weighing these factors against solid figures.

Factors

In looking for factors that will influence all computer builders everywhere until the middle of the next decade, it is not difficult to decide that the three most important must be the size of the U.S. Justice Department is seeking a rapid solution to its ten-year-old monopoly wrangle with IBM; the continuous rapid expansion in exports of data processing products from America; and the rapidity with which competitors are penetrating IBM's customer base with machines able to run IBM's and users' parallel software more effectively.

In the ten years since IBM calmly deposited two million documents with the Justice Department for consideration prior to the start of the monopoly proceedings — much to that august body's understandable consternation — IBM's sales have quadrupled to \$21.1bn and earnings quintupled to \$3.1bn. Indications from the U.S. at the end of January were that action was being contemplated that could bring an end to the proceedings this year.

Belief that an end must come to the legal charade soon stems from the conclusions of a Presidential Commission which were issued recently. One Commission recommendation would reduce the degree of legal proof needed to show that a monopoly existed; and a second would make it much easier for the Government and its legal forces to ensure that the situation will end and not recur.

If IBM should split into five groups, as has often been suggested it might, this will be against the judgment of most of its U.S. competitors in the general-purpose computer market. But why should the Justice Department seek to split up Bell Systems and leave IBM intact?

In some ways, this move has been forestalled already by IBM itself in a number of reorganisations, including the formation of the General Systems group. And while the slow process at the Justice Department seems to hamper IBM very little, nothing appears to reduce the flood of exports from U.S. factories. Last year with about \$4.8bn-worth of business equipment going abroad, 53 per cent of this computers, the increase in exports was about 26 per cent — higher than average industry growth.

Important

It is important to record that while U.S. exports of computers and related equipment showed a growth during the year which indicated a year-end total of about \$2.5bn, the rate for the year was ten per cent. But in parts of computers and peripherals the figures for the end of the year is likely to have been around \$1.46bn. This represents a massive 68 per cent export rise, a figure which has many implications for the activities of American companies in Europe and elsewhere and also in this survey.

Interesting in the light of the foregoing is the forecast by Richard Gehring, Univac president, that 1979 deliveries of computers world-wide will reach \$17bn or 13 per cent up on 1978 which was 16 per cent ahead of 1977. This is by all makers everywhere.

Univac expected to exceed the \$2bn mark for the first time in its 1978 fiscal year which ends next month. For the 1979 fiscal year, Gehring said, a further growth in income of about 15 per cent was anticipated with orders up 20 per cent and prospects that by 1985 the company would grow to \$4bn.

It was the 1108 machine that really put Univac on the com-

mercial computing map ten years ago and it is a successor—the 1,100/80 Univac's biggest machine—that Gehring attributes much of the company's current success.

Univac was one of the five competitors with IBM that U.S. New York Stock Exchange analysts in 1975 expected to be showing serious signs by now of a demise early in the 1980s, with only Burroughs left healthy enough to continue to survive. It seems the prediction has been correct only in the latter case. Burroughs is indeed healthy enough to survive and has been making remarkable progress in both large systems and in complex networks, especially in Britain.

Meanwhile, NCR, which the analysts expected to be the first to go, pushed income up 19 per cent to \$855m and earnings up a record 61 per cent to \$90m last year. In 1978 the company announced that it would compete with IBM right through the range up to the very largest machines, which is strong talk for a supposedly moribund organisation.

Control Data Corporation, over which the analysts were also shaking their heads, has not only survived, but has designed the world's most powerful computer, the Cyber 208. This machine can solve 46,000 simultaneous equations, which means that it can handle models of the weather patterns in the northern hemisphere of a complexity hitherto beyond the capacity of existing machines. A consequence is that CDC has an assured market for this equipment not only in every major weather centre but also in Government and big company computer centres where complex modelling is a large part of the workload.

Control Data engineers have used the biggest conventional computer available to them from the company's production lines to help design this new giant machine, which far outstrips in its capabilities anything available from competing companies.

Using a complex of software, called AIDS, the engineers have been able to test out proposed innovations for the 208 before committing hardware. Working with Fairchild, they have also developed a family of large-scale integrated circuits for use in this and other members of the new super-computer group.

CDC, largest builder of peripherals outside IBM, also is gaining a great deal from the continuous growth in demand for peripherals.

For Honeywell, 1978 brought a 92 per cent increase in sales to \$3.5bn, of which computer equipment represented \$1.3bn. (up to 23 per cent).

The Honeywell results will go a long way towards scotching the recurrent rumours that the company was preparing to abandon its computing wing to a competitor. How these arise when data processing is the most successful sector of the company is hard to say. They may derive from the fact that Honeywell found it necessary to abandon the design of super-computer it had on the stocks at Phoenix and start afresh, while agreeing to differ on very large machines with CII Honeywell Bull in France.

International stature can certainly be claimed from Britain's ICL which has just passed the \$1bn mark and is thus the world's fifth largest computer builder. Its 22 per cent growth to better than \$500m in 1978 coupled with a 24 per cent advance in pre-tax profits is all the more noteworthy in the light of manufacturing problems and sharply fluctuating exchange rates.

Order books are at record levels so the company is well on its way to achieving the \$2bn target for 1983. Difficulties with the most complex of the operating systems for the largest of the company's machines appear to have been contained and a remarkable success has been scored with the \$4m 2980 for which a 200th contract has just been secured.

ICL has not repaid the \$40m Government research and

to IBM marketing forces. But they should cause no rejoicings in traditional competitors' camps. The reason is that any user who moves, say, from a large IBM central processor to an Amdahl 5/8 will already have given himself such a trauma that he is most unlikely to move again for many years.

Then there is the software question. For the 360s, the 370s and the new 308x equipment, and the new 308x equipment, machine and user application software is estimated by Gene Amdahl himself to represent an expenditure of \$200bn, by IBM and by users.

Software is expensive, conversion is expensive, so marketing men for the compatibles have a relatively easy pitch. They do not have to tell potential customers that there will be conversion changes and that some new software will have to be written—only that the new machine will cost less and run faster (in most cases).

Conclusion

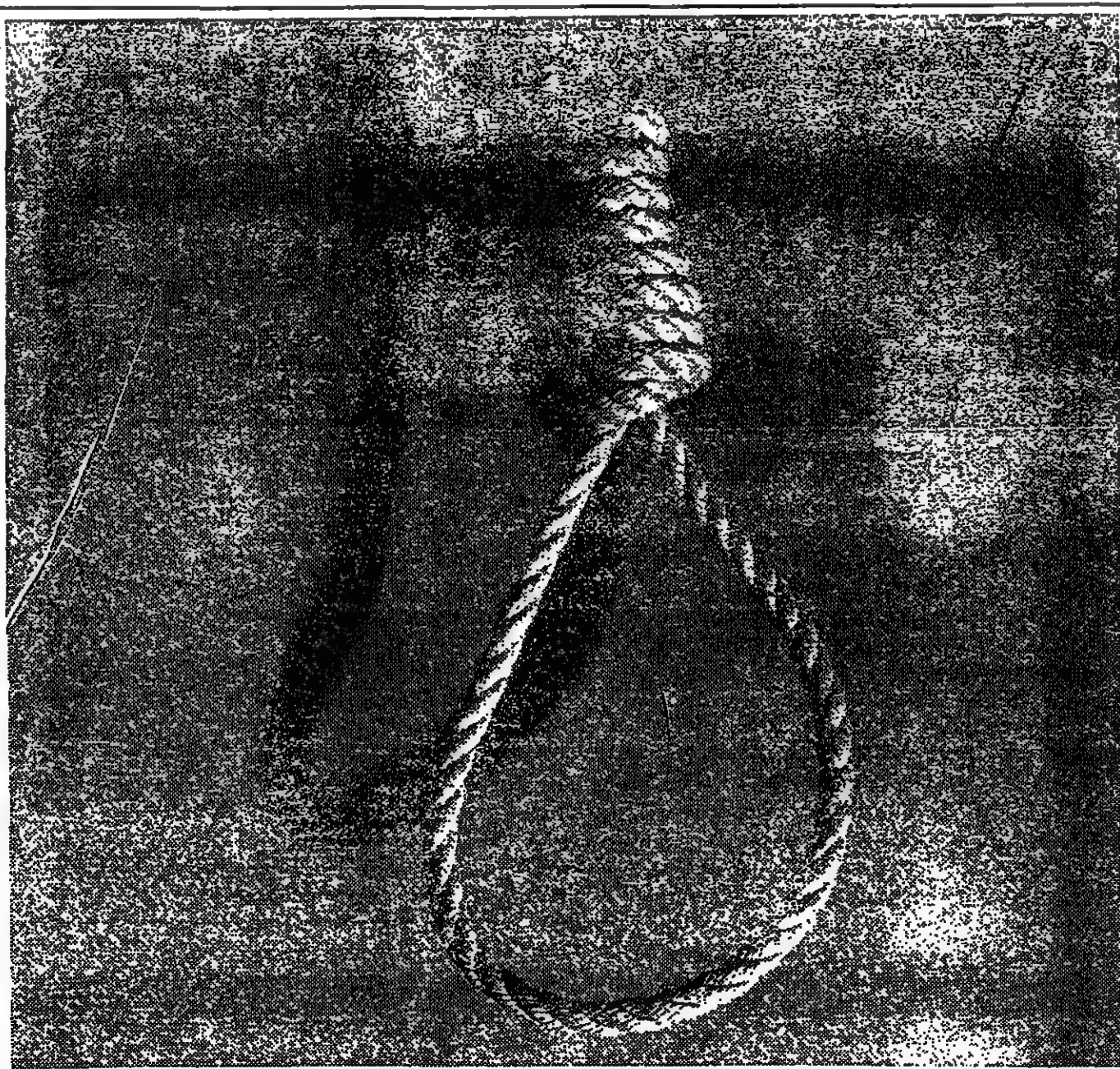
To sum up, in the compatibles ultimately could limit IBM's traditional competitors to that section of the market they can capture from scratch. Customers switching may be cut to a very low level, well down in the range, which is where many recent client captures have been taking place—for instance IP System 3 to ICL 2903. And now Japan is seeking to extend its penetration of the U.S. market where, at present, only Fujitsu has a manufacturing base. The above refers to well over 60 per cent of the total computer marketplace.

So far as small business computers are concerned, the most recent compilation by Computer Guides showed that there were 53 entrepreneurs active on the UK market plus 28 manufacturing companies, including all the large mainframes makers and the leading makers of mini-computers.

This is in a market sector growing at between 30 and 40 per cent annually. So competition is intense and new contestants are appearing almost every week.

Many of the entrepreneurial group are—inevitably—basing their offerings on Digital Equipment Corporation Machines. One of them, Gamma Associates, is expanding so quickly that the day when its turnover exceeds the UK sales by DEC of its own units cannot be far off. One company in the supermini market which is worth watching is Tandem, a relative newcomer which boasts that in all its dual machine installations it has so far placed with users, it has not yet had a breakdown of service. With a predicted meantime between failures of 53 years this is not surprising.

Ted Schoeters



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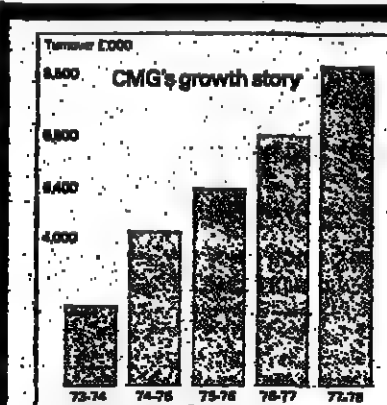
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THE COMPUTER INDUSTRY III

Encouraging growth projections

IN TERMS OF international trade, Europe is easily the largest market for computer equipment, partly because of trading between the separate countries of Europe, but also because of the very large imports from the U.S.

United Nations figures for 1976, the latest available, show that in computer and office equipment total imports by European countries was almost \$6bn or 56 per cent of the total of world trade in that year. Total exports by European countries were just over \$5bn, which implies net imports of about \$1bn.

The figures show that France is the largest importer at

\$1,200bn compared with exports of \$558m. Germany came second with imports of \$1,18bn compared with exports of \$1,64bn and the UK third with imports of \$978m against exports of \$925m. Italy had imports of \$380m and exports of \$568m.

Analysis of the figures by 21st Century Research, the U.S. analysis shows that the U.S. enjoys 28 per cent of the world trade followed by West Germany with 16 per cent, Japan with 9.6 per cent, the UK with 8.8 per cent and then France with 8.2 per cent.

It is worth comparing these figures with the often quoted fact that IBM alone has some

60 per cent of the world market for computers and that the American companies together account for about 78 per cent of the world market. This obviously reflects the fact that America is by far the largest market for computers and with about 46 per cent of the total 189,000 systems installed throughout the world (in 1976). However, it should also be remembered that most of the U.S. companies, particularly IBM, manufacture throughout the world, so that world trade figures do not adequately reflect the dominance of American systems technology.

Worldwide, the total computer market is estimated by the U.S.

consultants Arthur D. Little (ADL) to have been \$18bn in 1978. They expect a real growth of 40 per cent over the next five years, with the largest thrust in smaller systems. When the associated revenues from software, terminals, services and office systems are included, total revenues are estimated at \$28.4bn in 1978, a 19 per cent increase compared with 1977. The previous trend for revenue to be derived more from services than from hardware is expected to continue until, by 1983, the split will be about 50/50.

By 1983, ADL expects annual shipments of the U.S. mainframe suppliers to be between \$25bn

and \$29.5bn. The growth rate of small computer systems in the price range \$20,000 to \$250,000 is expected to be relatively much faster than for the large mainframe, with a doubling of shipments by 1983 both in the U.S. and elsewhere. One of the main reasons for the expected growth in small systems is the emergence of a new generation of equipment which is versatile enough to be used on its own or to be hooked up into a large network of systems. Small computers are therefore expected to find a market both among small-sized companies as well as with the big users.

For the large systems, costing more than \$1m, a growth of

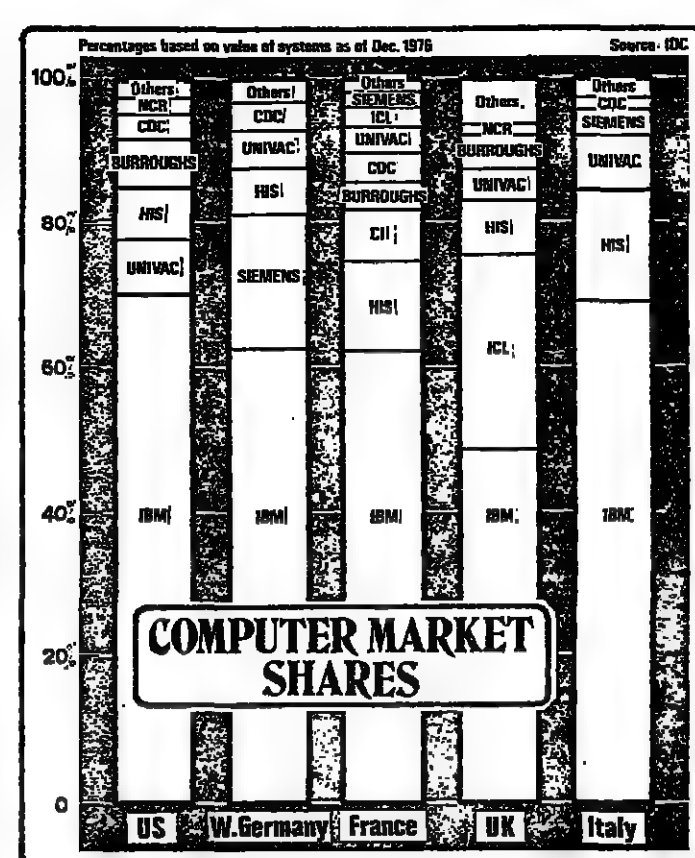
about 50 per cent is expected over the next five years from the 1978 shipments estimated at about \$6bn. A continued increase in the market for IB' plug-compatible equipment is expected beyond the 1978 figure of \$650m which represented about 3.6 per cent of the worldwide total computer sales.

In 1979 the general outlook of the industry is buoyant in spite of signs of an impending recession in other industrial sectors. A growth of between 15 and 20 per cent is being predicted within the mainframe industry against the 12 to 15 per cent in recent years.

The companies producing small computers led by Digital Equipment Corporation (DEC) are talking of growth of perhaps 25 per cent to 30 per cent, which may represent a slight slowing down from the explosive rate of the last few years, but is, of course, growth from a continually widening base.

IBM, the barometer of the whole industry, reflected the general optimism among the big seven companies with revenues of more than \$1bn has increased its capital expenditure over the \$3.4bn spent in 1977, opened two new factories in the U.S. and increased employment by 12,000 people in the first nine months of the year. IBM's revenue for 1978 increased by 16 per cent to \$2bn with earnings up 14 per cent to \$3.1bn. Honeywell, the seventh largest company, in terms of data processing sales, increased total revenue 21 per cent to \$3.5bn, although only a proportion of that was accounted for by data processing revenues.

In reviewing the world's markets the two great uncertainties are the potential for selling computer systems to China and to the Soviet bloc. It is clear that China could represent an enormous market, and it has been taking an intense interest in all the major systems available. On the other hand, it is probable that it will want to manufacture as much as possible within China. The needs of China are still as uncertain as the political pressure in the West which may well build up feeling against exports of such a sensitive product to a Communist country. Similar considerations apply to the Soviet Union. The joint development of the ES series of computers by the seven Comecon countries is



not keeping pace with the countries' needs for sophisticated computing. According to some Western experts the Soviet bloc is five to seven years behind the West in the development of computers and there is growing pressure to import hardware and know-how. However, trade of this nature is subject to the veto of Comcon, the U.S.-dominated committee, set up to vet exports of strategic importance. Present indications are that trade will not be allowed to build up to a very significant level.

Otherwise, the main factors in world markets are likely to be the increasing protectionism within Europe the growing strength of European computer and semiconductor industries and the exporting ambitions of Japan. These factors will all tend to reduce the dominance of America on the world scene, but no very rapid change can be expected. Because users become easily locked in to a familiar supplier, the computer market has an inertia built into it which is quite unlike that for say ship-

Max Wilkinson

Service bureaux expertise

NOT ENOUGH attention has been paid in the past by Government to the work of the computer service industry, with the result that there now remains only one independent service bureau which is completely free of transatlantic trammels. It is CMG, which, unlike most of its peers, is not an affiliate of a much bigger UK or U.S. group.

Yet the service industry is a very large sector of effort in its own right with last year's total turnover probably well over the \$300m mark, a significant figure even when compared to total sales of computer equipment in the UK in 1978 at \$780m or thereabouts.

Rate of expansion of the industry is about 20 per cent annually, which will take it well over the \$1bn mark by 1985.

Within the service industry, consultancy and software expertise sales are not easy to determine from Department of Industry breakdowns. An approximate figure would be about \$40m for consultancy in 1978, with possibly the same for software work. The complication arises because it is not possible to differentiate completely between work done by bureaux for the major groups that own

them and operations on behalf of outside clients. This situation may not last, however, if the largest bureaux, like UCSL and BOC Datasolve, continue to move from strength to strength.

Within the past year or so, Government has become aware of the fact that the nebulous thing called "software" is indeed a most important commodity, though it can neither be patented nor trademarked with any success. It took 10 years for the industry to teach the purchasing holders that just as every car has an instruction manual for drivers, so must every computer have sets of operating instructions, both for the physical operator and the electronic controller inside the machine.

Another fact that took a long time to drive home was that in Britain, with its long tradition of engineering problem-solving there was a particular aptitude for software work that needed to be fostered and turned into an exportable asset. IBM, Honeywell and Univac recognised that fact long ago. So did the French makers seven years ago when the French Commercial Counsellor spent nearly two years fostering links between leading UK and French software groups.

At least we now have Inscac, formed under the wing of NES and joining CAP, Logica and SPL International in a loose confederation where Inscac acts somewhat like an international broker for software products, for which it recognises a need and a market, commissioning them from one or other of the members as it sees fit.

Its first big step has been to sign an agreement with the well-known Calcomp organisation in the U.S. to provide at least 15 applications routines for Calcomp's existing and novel graphics equipment.

Leader

Calcomp is world leader in this area of computer-controlled devices by a long way and has just extricated itself from financial problems resulting in part from extremely heavy development costs.

Inscac has entrusted the work to SPL and some idea of the importance assigned to it can be gained from the fact that, at Abingdon, SPL is installing a full IGS-500 interactive graphics system to carry it out.

Inscac is also undertaking world marketing of the real-time language RTL 2, developed originally from small computers

by ICL and supported by STL. The quinquity of the situation is that a Government-backed body is helping to promote a privately developed and internationally known language in competition with the CORAL language developed within UK Government establishments, primarily for military use, but now being spread into industry.

What really could put Inscac on the map is the conclusion (long-awaited) of an agreement with the Post Office to market Viewdata in America. This will not be an easy task even though Inscac is being aided as a consultant by Sam Fedida who invented Viewdata, and it is hard to understand why the Post Office is hung back.

It is even harder to understand why the Inscac organisation tends to draw Conservative bullets, since it is operating primarily as a marketing organisation run by people who have been in the business for years. There can be no comparison with the high-risk operation that Inscac represents—with public funds at risk.

Before returning to considering bureaux it is important to note that with its new medium-scale computers, the 4300 series, IBM cut machine costs to the bone and put up soft-

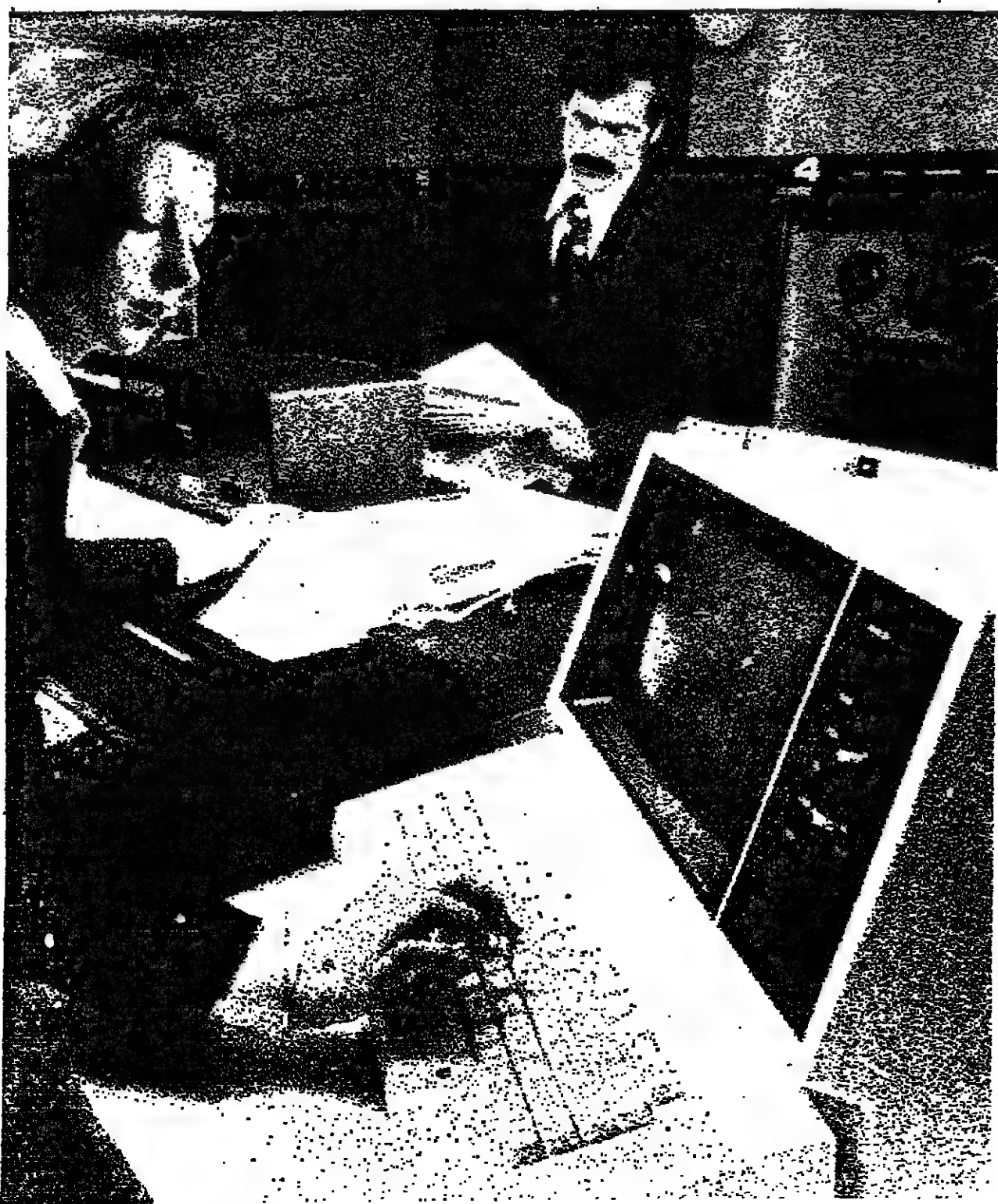
ware fees sharply. Software prices charged by the company become an important part of the total cost of these machines which run from, say, \$40,000 to \$140,000, for a workable array. Some competitors, including Irel and Hitachi, anticipated these moves several months ago and alternative major software entities have been written and tested.

Initial reaction from most competitors is that the move is intended to make switching from existing IBM equipment much less attractive, in a particularly vulnerable section of that company's range. Bureau operators are lean and hungry men. They can teach most users and all manufacturers most useful lessons and take risks that the average user boggles at, simply because they know the equipment far better than most people. After all, if a bureau has to drop out a defective machine, it loses money and the goodwill of customers.

All the leaders of the big bureaux have an expertise which is not matched in any other area of the industry and it is some comfort to know that their advice is now frequently sought by Government.

Ted Schoeters

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THE COMPUTER INDUSTRY IV

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THIS YEAR in Britain there will be a market for integrated electronic circuits, of which microprocessors are a sub-set, amounting to about £147m. Domestic production will reach £80m, comparatively little of that being imports.

In 1982, the total UK market for this section will have risen to £130m, or a gain of 20 per cent over three years—not what one could call a mad rush.

But as the imports of components in general have been rising steadily over the past several years at a rate of 15 per cent a year, it is very likely that imports will account for an even larger share of 1982 consumption than the 46 per cent or so for 1979. Half the 1982 market figure, or £90m, would be a good guess.

In 1978, UK computer imports exceeded exports by £150m. In 1977 the figures moved even more sharply into the red at £200m and for 1978, judging by the belated statistics from Department of Industry which encompass the first half year, the computer industry deficit is likely to have been a staggering £300m. Go on like that and the 1982 shortfall could be £450m.

Peripherals

And where do we in Britain continue to fall down? Precisely where no real support or encouragement has been given by Government or any of its many arms—peripherals. Not to go into too much detail, the 1978 shortfall in this area is likely to have been £260m, very largely made up of ancillary pieces of equipment, or parts of equipment for peripherals manufacture, not precisely specified in Government figures.

This problem has not been tackled by Government and no amount of talk about microprocessors and their beneficial effects will have any influence on it at all. Overseas suppliers of these peripherals will build in—building in—micros as they see fit and if their use is justified, not because the DoI says they should.

Yet any computing system

and most instrument systems based on micros need peripheral devices, or ancillary units of one sort or another to be of any use. And the value of such ancillaries and the cost of making the whole array of equipment operate (programming) would generally lie between one hundred and one thousand times the value of the micro itself.

It is hardly surprising that Jim Bonnett in the influential "Green Sheet" says wryly that "never have so many politicians jumped on to so small a thing as a microchip, so late in the game."

He points out that the fear of job losses through automation has been with us since the 1950s and yet no great losses have materialised. On the contrary, where smaller businesses and industries are concerned, automation has tended to improve working conditions while creating new jobs in the user industries and with suppliers.

Vehicle for the Government drive is the National Enterprise Board which has chosen to back entirely new ventures in components by Immos and GEC-Fairchild while ignoring the fact that Ferranti has developed and is selling a perfectly adequate military micro, or that Plessey has a number of exportable memory products including bubble memories, as well as a significant development of a large holographic computer memory now under way.

What the chances are of the chosen two in the very tough world of the semi-conductor industry will come to later. Meanwhile, there is some doubt as to just how much is being put into the micro plans.

A recent scathing analysis by Kenneth Warren, MP, took apart the much-vaunted "£400m boost for micros" and discovered only £100m, additional to £135m already earmarked. Of the latter sum, Immos receives £50m. The DoI's micro processor Application Project (MAP) receives £15m and the Micro-electronic Industry Support Programme (MIPS) a further £70m.

The December announcement added £10m for MAP, and quite rightly so, as well as freeing another £60m for education and training, unspecified. Hence Warren's £100m.

It is this type of nebulous approach to education and training that David Firnberg, head of the National Computing Centre, says is the worst aspect of the new Government strategy. Mr. Firnberg reminds the Government that the French have set aside a much larger sum than Britain for education in data processing, while Japan's information-oriented education programme, drafted in 1972 (1) provided for an expenditure of \$36bn in the period 1972-85. That is over £1bn a year on education alone.

Controversy

On Immos, Mr. Firnberg says that part of the current controversy stems from the fact that NEB is using public funds to back the entrepreneurial enterprise of three individuals. And as a general, but cogent, observation he underlines the danger in a small market such as that of the UK in splitting up available resources between too many recipients, or promoting ventures in areas where there already is savage and lethal competition, such as in office electronics.

He warmly welcomes any boost to application of computer techniques. To look a little more closely at what may befall Immos and GEC-Fairchild, it is valid to point out that GEC has a history of abruptly terminating any manufacturing operation running at a loss. Sir Arnold broke with Mullard at a very early stage in the game when Associated Semi-conductor Manufacturers was not yielding according to his taste. Later, when English Electric-Marconi was absorbed, Marconi's £15m showpiece plant near Chelmsford, making a series of standard integrated circuits, was closed down and all development concentrated in a small area at Wembley.

The reason for these moves,

and for the long-term losses on semiconductors by all the UK makers, was the fierce competition from dumped U.S. circuits, assembled offshore (in Taiwan, Singapore and so on) at wage rates frequently ten times less than those which prevailed in Britain. UK makers could not even produce at the imported device prices let alone sell.

Now GEC-Fairchild in Cheshire will win a large slice of Government support and Immos will be fully Government supported. Both will ultimately be making devices by 1981-82 which are likely to become industry standards before then. How immune to a new and still more savage price war from the American majors can these ventures be?

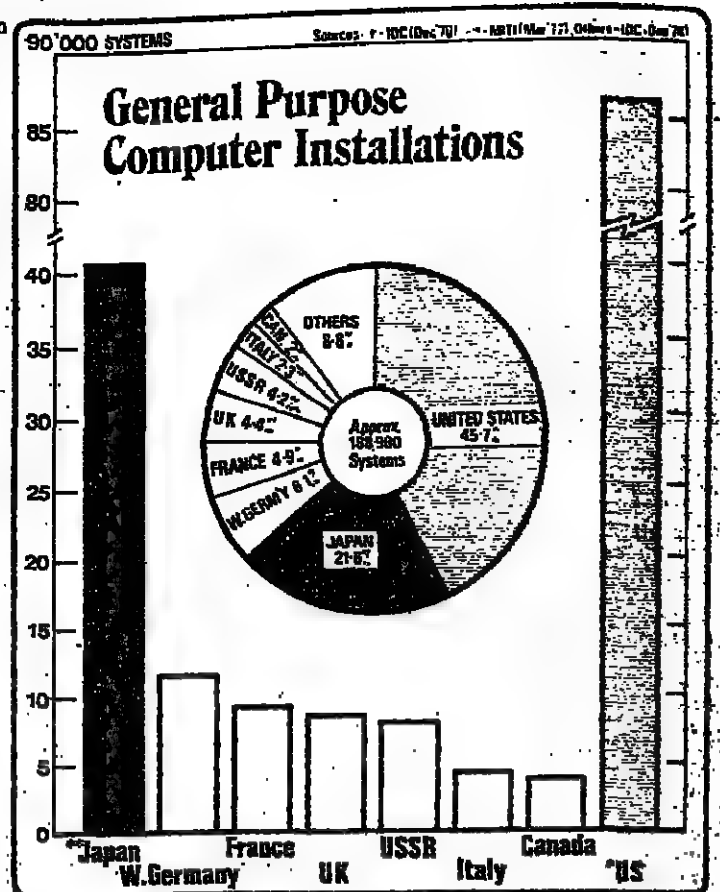
A salutary lesson can be derived from the recent results of Texas Instruments, which is undoubtedly the world leader in circuit innovations and is mass-producing the first 64K random access memory in the world— which Immos proposes to emulate in 1982, or later. Components accounted for \$1bn out of the \$2.5bn Texas total sales. They provided \$128m out of the \$257m income before taxes. But while other sectors of the company's electronics involvement expanded at 37 per cent (digital products) and 23 per cent (Government), components advanced by 5.7 per cent only, after 8 per cent in the previous year.

Meanwhile, the per capita product from the company's 78,571 employees was in the region of £16,000 and while net sales have doubled in five years, average employment has advanced only 13 per cent.

No British company is anywhere near the above per capita level. But that is what potential competitors with Texas, National Semi, Motorola et al will have to achieve. And together the latter are spending probably \$1bn a year on research and development, plus an undisclosed amount of military funding.

Immos, GEC-Fairchild and NEB, please note!

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David Churchill

Retail trade systems

A REVOLUTION at the checkout is planned for the retail industry in the 1980s as more and more retailers—especially the big supermarket chains—invest substantially in new electronic sales systems.

The supermarket chains, including Tesco, Sainsbury, Fine Fare and International Stores, are leading the way in the introduction of computerised checkouts because of the substantial benefits that higher stock control and management information can bring in a high-volume business such as food retailing. But retailers from all other sectors of the industry are looking closely at the latest technology—and the manufacturers themselves are anxious to achieve as wide a market as possible.

In addition, the most sophisticated of the new systems now on offer give shoppers a fully-detailed till receipt, describing each item and the price paid. Items are either keyed into the machine or read by a high-speed optical scanner which decodes a special bar code printed on the product. Such detailed information provided when customers pay is claimed by the manufacturers to give shoppers greater confidence in the accuracy of the till and it is argued that shoppers who are happy with a store's checkout arrangements are likely to shop there again. The electronic systems are also aimed at speeding up shopping flows, avoiding long delays, and the claimed savings in management costs should also help keep prices in the shops stable.

However, it is the management aspect of the new computerised checkouts—rather than simply providing more information for shoppers—that is the real reason why the big British retailers are showing so

much interest in them. The new systems have the potential to completely change the face of retailing management, enabling stock control procedures to incorporate at least daily—if not more frequent—stock reports. Armed with such up-to-date information, the retail executive then is able to respond to sudden surges in demand for particular products, or identify areas where sales are weakest and not earning enough. In a fast-moving business such as food retailing where time literally does mean money and the volume of trade is large, the retailer who is able to make the fastest decisions usually comes out ahead of the game.

Stocks

Computerised stock control linked to actual shop-floor trading also enables stores to cut the amount of stock held by up to a fifth, and to order new stock as late as possible to reflect market trends.

The pending electronic checkouts revolution in the High Street will also be helped by retailers' need to replace the checkout systems they introduced for decimalisation in 1971.

Mr. Irving Nixon, a retail specialist with IBM, the U.S.-owned multi-national, said: "The commercial use of low-powered laser beams to read catalogue numbers from a bar code symbol brings a new dimension to the role of the checkout. For the first time it has become practicable to collect information on every item which leaves a supermarket as well as recording what was delivered to the back door."

There are basically three levels of sophistication in the new computerised systems available to retailers.

First there are electronic units that perform almost exactly the same work as the electro-mechanical units they are due to replace. The manufacturer has simply replaced the internal, electro-mechanical components with modern electronic ones. Prices, therefore, can vary enormously according to whether the unit is needed to serve only a few customers a day, or needs to stand up to the pounding received at a busy supermarket checkout.

At a more sophisticated level are the so-called "stand-alone data capture units". These perform all the normal functions of a cash register, but also record information about sales on an internal magnetic tape cassette which can be removed at the end of each day, or once a week, and taken away for computer processing.

At the top-end of the market are the fully computer-controlled systems which incorporate laser-scanning. These have electronic units at each checkout controlled by mini-computer in the shop or, in some cases, by a remote computer connected to the store via a telecommunications link. Such systems are much more flexible and have many more facilities than the stand-alone units.

IBM has emerged as one of the main suppliers of the new computerised checkouts for retailers. It has three main systems on offer: the 3650 retail system; the 3680 supermarket system; and its new 5260 retail system.

The 3650 consists of a point-of-sale terminal, a merchandise ticker encoder, a visual display-based purchase order/receiving terminal and a powerful controller that links the shop's retail system with a main computer.

The 3680 aims to integrate

data processing at individual store and head office level into one system. It consists of a terminal sited at checkout counters and linked by cable to a store-level controller. Each terminal is equipped with a cash drawer, keyboard, and display and fulfils the functions required at the checkstand. It can be bought with an optional checkout scanner able to scan items marked with a machine-readable code and so reduce manual entry of goods information. The controller can supervise the operation of up to 24 terminals.

With this system the supermarket manager can record data at the critical point, the checkout, and use that information to improve many aspects of a store's operations.

IBM's 5260 is designed to perform all normal cash register operations and provide an economical store-and-forward data collection system for both individual and multiple stores. It is designed to complement the group's other systems but provide different capacities and operative approaches to particular problems.

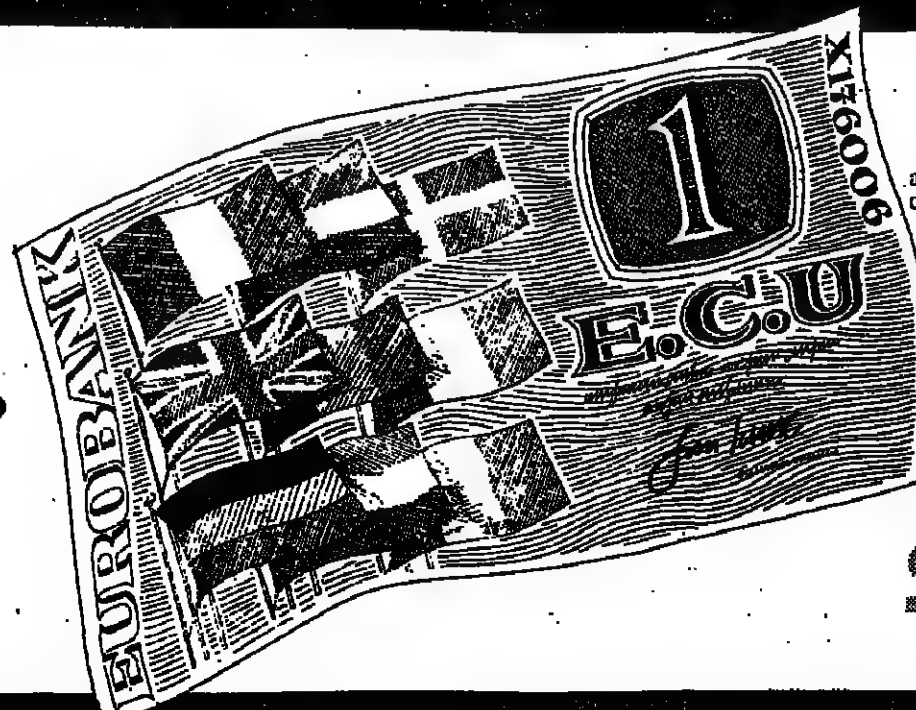
NCR's 255 system is currently being used at the SavaCentre hypermarket in Washington new town, Tyne and Wear. SavaCentre is jointly owned by Sainsbury's and British Home Stores.

The NCR 255 is based on two computer processors controlling 38 checkouts, disc drivers, visual display units and a printer. Several thousand lines are entered into the checkout terminals by code rather than by manual entry.

A comprehensive financial system is also operated including the payment of all suppliers' invoices.

David Churchill

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SPERRY

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A revolution in the office

A REMARKABLY wide range of companies is now committed to the belief that the office equipment market for computer driven systems will show very rapid growth in the next decade.

The emphasis which International Business Machines is beginning to place on small communicating systems and on terminals is a major indication of this trend. The development of computer-like products by the copier giant, Xerox points the same way. In the U.S., a very large number of smaller companies are attacking the market while General Electric has come in with a new printer. In Europe two large multinationals, Philips and ICI, whose centre of gravity has hitherto been well away from the office, are developing a wide range of products for the office.

More traditional office companies like Olivetti and Adler, which have been diversifying up the small computer market, are now developing products which will communicate with each other. Major computer companies like International Computers Limited (ICI) which have mainly been selling larger systems, are considering how to move down-market into smaller equipment. At the same time electrical companies with a broad base in heavy engineering, particularly Siemens in Germany and the General Electric Company (UK) are starting to move strongly into office equipment. Siemens for example has recently launched a word processor in the UK, and GEC has bought the U.S. office equipment company A. B. Dick as a starting point for its new strategy. Even the British Government has become involved with a £40m office equipment company called Nexos, set up as a subsidiary in the National Enterprise Board.

Several fundamental trends in society and in the evolution of electronics technology are causing this great focus of interest. First the continual automation of factories will displace more manual workers and add to the proportion of administrative, clerical and service work. Second, the scope for automation of factories will begin to be limited by political and trade union pressures as well as by the fact that automation will reach a natural technological limit. Automation of factories, with the attendant capital costs will accelerate the trends towards the dominance of large multinational companies, making large volumes for international markets. The television, automotive and calculator and watch industries are just three examples.

Complex

These large companies will inevitably require highly complex management structures with sophisticated communications and information networks to co-ordinate their production and marketing. Already most major companies use large computer installations to deal with accounting, stock control, inventories and many other aspects of the business. Often these functions are carried out in fairly big central computer installations. The next generation of computer equipment will be aimed at integrating these central functions with computer techniques used for routine tasks in the office itself.

It is frequently said that the new office systems will depend upon the exploitation of the microprocessor or microcomputer, which can already be bought in its naked form for tens of dollars and will become both cheaper and more powerful. Certainly a complete generation of small office

systems has grown up on the basis of cheap, compact microcomputers. Many of the more successful have been focused very sharply on a few particular needs of the small office, particularly accounting and payroll calculations. They have been sold, not fundamentally as computers, but as accounting machines with rather better features than the electromechanical equipment they replaced.

Capabilities

In one sense, however, the micro-computer is becoming the least important part of the office equipment systems which are being developed. It is now taken almost for granted as a basic component of almost all new machines, no matter what they do, so that micro-computers will become like electric motors, a vital driving force which is one of the least interesting aspects of a piece of equipment to the user.

Attention is shifting, and will continue to shift rapidly towards capabilities of so called peripheral equipment like printers, magnetic tape and disc storage units and television-like displays. At the same time customers will become more and more interested in how all these items of equipment can be connected into a communicating system.

Electronic typewriters, copying machines, accounting machines and magnetic filing systems are all capable of being wired together through a company's internal telephone system, or, with suitable conversion equipment through the public telephone network to remote sites. Use of ordinary telephone lines limits the network to relatively slow speeds for the transfer of information. Where the network has to carry a large amount of traffic, buildings can be wired up with high speed cable, carrying a constant stream of information from office to office.

Although the information will be carried in a stream of electronic pulses (the "bit stream") which is used and understood by computers, communication rather than computing is likely to be the essence of such networks. Bit stream can be used to encode the human voice, television pictures, facsimile images of documents or simple alphanumeric characters. A network once established can handle all these different types of traffic simultaneously, although the transmission of a facsimile document uses much more of the electronic pipeline's capacity ("bandwidth") than the transmission of text in a form similar to that of the Telex.

Economics

The economics of establishing an electronic communications network within an office will become more attractive as extra pieces of equipment are added. Only the very largest companies will want to install a complete system all at once, and even they will wish to add new items as they come on the market.

A great advantage will therefore be reaped by those companies which can offer a complete system of compatible equipment. Customers will want to be sure, not only that all the machines which they buy talk the same language, but that future models still on the drawing boards will be compatible with earlier generations of equipment.

These ideas probably seem futuristic to office managers who are still replacing mechanical typewriters with electric machines, and who tend to think of small office computers as performing a special function, like accounting, required only in a particular office. However, acceptance should pause to consider the way in which plain paper copiers developed in little more than a decade from being an expensive novelty to an almost universal item of equipment.

Acceptance of the new systems will greatly depend on the ability of manufacturers to reduce the cost of some of the most important items of peripheral equipment. This is particularly true of electronic typewriters or "word processors" and so-called "intelligent copiers."

The essence of a word processor is that a typewriter key-stroke operates an electronic switch instead of a mechanical linkage. The electronic code corresponding to each character is stored in a memory similar to a calculator memory, or recorded direct on to a magnetic tape or disc. The word processor includes a micro-computer which allows the text to be corrected or edited in its electronic form. The memory is then

played back to drive a printer, which produces the finished document. Clearly the electronic data can be sent to a printer in another room or another building to produce "instant memos" or the beginnings of electronic mail. The keyboard and the electronics of such a machine are becoming very cheap to manufacture and could before long compete even with a manual typewriter. Printers, on the other hand tend to be rather expensive to produce. However, some intensive development work is now being put into the production of new methods of printing.

As a result of this work a range of new printers is likely to come on the market in the early 1980s, including some which are very competitive with the ordinary typewriter.

One promising development from IBM and A. B. Dick is the ink jet printer. This is a device which can "paint" characters on a page by means of a jet of ink whose direction can be altered by applying electric charges to focusing plates nearby. SBS Publishing, the Californian analysts, say that print heads for such printers can be manufactured very cheaply at about \$20 and have a very long lifespan.

It is possible, therefore, that ink jet printers will replace ordinary printers in many applications. The special advantage, however, is that the ink jet can move in any pattern, and is not therefore constrained to reproduce particular type fonts. An ink-jet printer could therefore be used in an "intelligent" copier in conjunction with a scanner, which first converted the image of the page to be copied into electronic code. Such scanners are already used in facsimile transmitting machines.

Advantage

The great advantage of this type of copier over the conventional electrostatic plain paper copiers, is that the machine which scans the original document need not be in the same place as the machine which produces a duplicate. They could be connected by a cable or telephone wire and could be used for communication in just the same way as word processors.

More important, the electronic image of a page could be put through a computer processor before it is reproduced. It could therefore be changed in size, altered in content, simply filed, or transmitted to another office before the copy is made.

It is obvious, therefore, that as machines for typing letters and copying documents begin to include a stage at which the information is put into electronic form, the advantages of communicating networks of similar machines will rapidly begin to be exploited.

The larger networks will be managed by computers, and they will also include numbers of small computers carrying out special tasks like file management and accounting. Executives will be able to use the networks for internal communication while using it at the same time to gain access to company information stored and processed in different departments.

Networks

In the longer term company systems will want to hook into the larger national and international data-carrying networks which are now being developed. One of the earliest of the specialised data networks was Teletext in the U.S., which switches "packets" of data throughout the country. In Canada, the Datapac and Info-switch services were established in 1977. In Europe, most countries are now developing high speed data networks, which are expected to be in widespread operation by 1980.

In France the system called Transpac is now starting operation. In the UK a switched data network will be developed in the early part of the next decade, and in Germany, the Datex service combines Telex and data transmission. Initially, these public data networks will be used for inter-communication between large computers or for high definition facsimile machines in regular communication. However, before long they will undoubtedly be used for electronic mail between large centres, transmitted during the idle hours of darkness. Eventually, when all telephone conversations are encoded in computer language, the distinction between data and voice networks will no longer exist. However, because of the vast amount of capital sunk into existing telephone networks, this will be a slow evolutionary process.

M.W.

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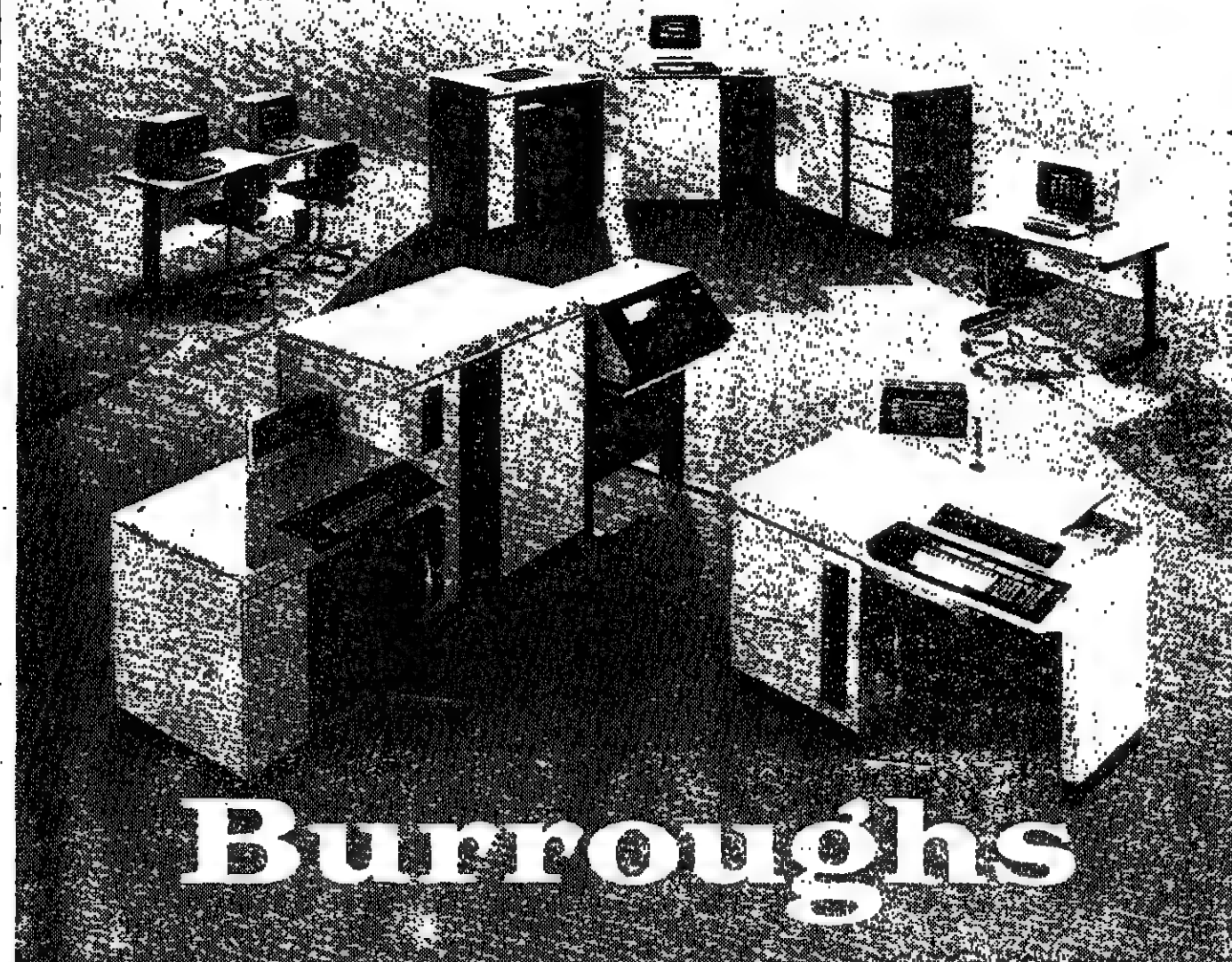
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THE COMPUTER INDUSTRY VI

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Computers that talk your language

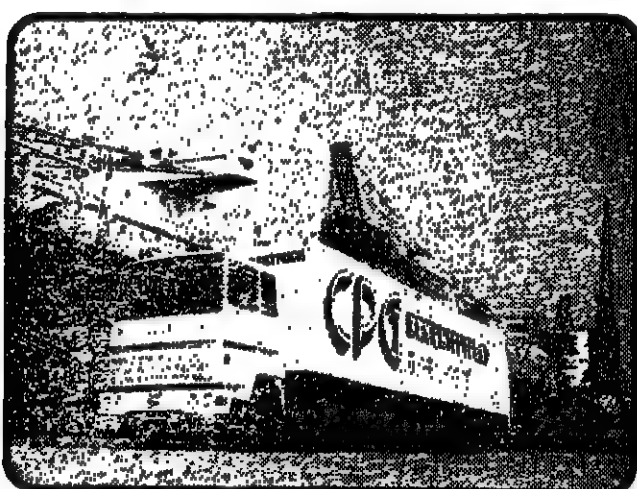
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No stopping the Japanese advance

THE STRENGTHENING of the dollar against the Japanese yen, the lowering of Japanese tariff barriers against foreign computers and the general discussions about the imbalance of Japanese trade have all helped to postpone the feelings of anxiety, which the country's computer industry is beginning to inspire among competitors.

Yet the Japanese computing industry remains a serious long-term threat to its American rivals; and consequently any other computing company in the world.

Although Japanese computer exports are still quite small, there is something slow, deliberate and inevitable about the Japanese advance which can chill the heart of any rival data processing executive, especially if he is accustomed to a time horizon which is not measured in decades.

The stated objective of the industry led by Fujitsu and Hitachi is to increase exports from the present 5 or 6 per cent of domestic production to about 30 per cent in a few years' time.

Domestic

By 1985, the Ministry of International Trade and Industry (MITI) expects that the total domestic installation of computers will have risen to 100,000 systems compared with the present total of a little under 50,000. By that date, annual domestic production is expected to have reached a value of \$8bn, which implies that a third will have to be exported. This target accords with that of Fujitsu, the largest company in the business, which is now making strenuous efforts to develop and expand its network overseas.

Since the annual growth of the Japanese domestic market for computer systems has been slowing down and is not expected to exceed 13 per cent a year in the immediate future, exports are an absolute necessity if the industry wishes to continue its previous rapid expansion.

It is true that the Japanese companies still have the possibility of increasing their share of their own domestic market from the present 55 per cent. However, the current exchange rate and the reduction of tariffs in April last year (from 13.5 per cent to 10.5 per cent for processors and 32.5 per cent to 17.5 per cent for peripherals) has greatly helped the Americans to maintain their position in Japan.

Furthermore, International Business Machines (IBM) has recently been making a strong counter-attack against its imitators in the U.S. and in Japan with an impressive round of price cutting.

IBM has been able to hang on to its 32 per cent share of the Japanese market for computers sold to major industrial companies. By comparison, Fujitsu has just under 20 per cent of the market and Hitachi 18 per cent.

Fujitsu and Hitachi are, how-

ever, co-operating closely in the development of a computer technology which is almost completely compatible with that of IBM. It is realistic, therefore, to lump their shares of the market together and compare IBM's 32 per cent with 38 per cent for the Japanese "plug compatible" rivals to IBM.

The other main manufacturers are Oki Electric, Nippon Univac, Nippon Electric Company (NEC), National Cash Register (NCR) Japan, Toshiba, and Mitsubishi.

Over the years a series of re-alignments have taken place among these rivals which demonstrates the impressive power of Japanese industrial planning. Last year, indeed, the Government managed to encourage a further shifting of the balance towards its avowed aim of creating one strong group in the large machine business, backed up by strong competition in the market for smaller business and process control systems.

Eight years ago, Japan had six major companies in the computer industry, all competing to develop mainframe computers for the domestic and international markets. It was obvious that Japan, with a domestic market only half the size of that in the U.S., could not support six different technologies.

The Government therefore used its substantial leverage through development grants and other means to encourage the companies to form three groups. They were: Fujitsu with Hitachi, NEC with Toshiba and Mitsubishi with Oki.

Nippon Telegraph and Telephone (NTT) was also closely involved in the joint development of very large scale integrated circuits in which all the companies co-operated.

These groupings were later reduced effectively to two, when Oki peeled off to concentrate on peripherals and Mitsubishi joined the Fujitsu-Hitachi group. Then last year, Toshiba effectively withdrew from the large system business when it transferred its marketing of large systems to a joint NEC-Toshiba Information System Company, which is controlled 60 per cent by NEC with a 40 per cent stake by Toshiba.

This effectively means that Japan has two groups in the large systems business, one which makes machines which can plug into an IBM installation (the "plug-compatible" FACOM-HITAC M-200 series made by Fujitsu and Hitachi) and NEC's ACOS-series systems which are not compatible with IBM.

The NEC-Toshiba group has about 15.5 per cent of the Japanese market, which is certainly viable, but perhaps not comfortable compared with the IBM or the Fujitsu-Hitachi shares.

Exports

The main advantage of both Fujitsu and Hitachi is that they are in a better position to build up exports than the group with computers made to an entirely Japanese-developed architecture which is not compatible with that of IBM. For the Japanese understood at an early stage that the export of computers would not be as easy as with consumer electronics, motor cars or even ships and steel.

The main reason is that computer systems must be intimately connected with the business methods and the operating philosophies of the companies they serve. A computer system is not analogous to a lump of hardware like a ship, a car or a television set, which can operate with perhaps minor modifications anywhere in the world. The computer system must be tailored very precisely to the needs of the customer, this requires, not merely an understanding of his business, but fluency in the language of the customer.

Furthermore, most computer users are tightly locked into the system which they already use, since a change is likely to mean expensive re-programming delay, and possible disruption of their business.

For these reasons Fujitsu and Hitachi decided to follow the lead of the IBM "plug compatible" manufacturers, which aim to sell machines in competition to IBM mainly to customers which already have an IBM installation.

Fujitsu, accordingly, forged a strong link with Amdahl, the pioneer of the U.S. plug compatible manufacturers, by providing finance at an early stage in exchange for 26 per cent of the equity. Amdahl is now the main exporting outlet for Fujitsu in the U.S.

Last year, in addition, Fujitsu concluded a potentially significant agreement with Siemens in West Germany. Under this agreement, Siemens will market Fujitsu's larger machines as a complement to its own range of IBM compatible machines.

Hitachi, meanwhile, is selling its machines into America through Intel (not to be confused with Intel, the semiconductor company). The larger Hitachi machines complement the smaller IBM compatible computers which Intel obtains from National Semiconductor.

In addition to pursuing the obvious markets in the West, the Japanese are now very active in exploring the very considerable potential for selling computers to China, Russia and the countries of the Far East.

Disadvantage

Exports to Communist countries, however, suffer the disadvantage that they are subject to the veto of COCOM, the international organisation which vets strategically sensitive exports to Communist countries. In the last year, the Americans under the leadership of President Carter, have shown themselves to be very suspicious about such exports.

Although the strategy of expanding exports through the plug-compatible route is the most sensible—and perhaps the only strategy for the Japanese at present—it suffers the disadvantage that it may, at any time, become vulnerable to pressure from IBM.

Some say that IBM is constrained by its own vast base of users who want to go on using the existing software. On this view, it would be difficult to change the design of IBM machines in such a way as to hurt the plug compatible manufacturers without at the same time raising an outcry from existing users.

On the other hand, there is the ever-present possibility that IBM, with its huge research effort, will find a way of making machines which cannot be imitated because they include vital parts of their internal programming on microscopic circuits (hardware).

Because of this danger, the Japanese Government has been strongly encouraging the development of software both for operating systems and applications. The aim is clearly to make the Japanese industry self-sufficient, so that it could survive independently of anything IBM chose to do. One of the major projects includes the development of pattern recognition systems, which are being produced jointly by all the major companies with a \$200m grant over a seven year period.

The object is to enable the computer to "understand" shapes including the Chinese characters and other patterns, and to recognise the human voice.

The Government is also sponsoring two projects for the joint development of extra high performance computer systems and extra large scale computers for special applications.

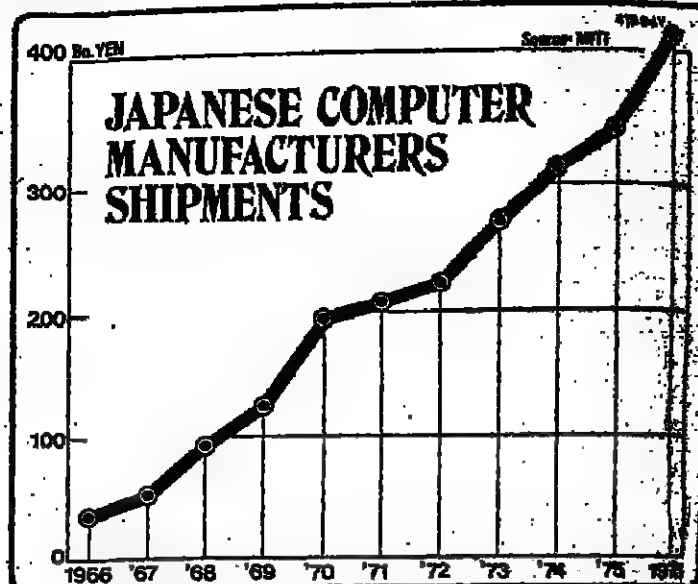
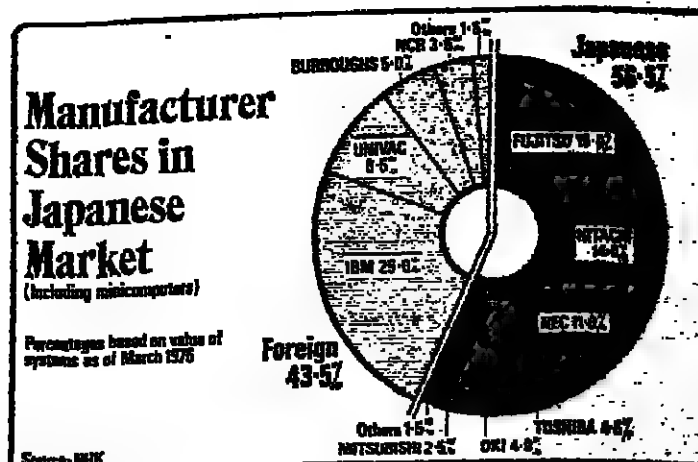
Meanwhile, as a foundation to all the efforts to develop computers themselves, the Government is providing subsidies estimated to be able \$1bn for a very large scale integrated circuits, as the basic components of the new generation of machines.

The large scale of Japanese Government support for its computer industry, combined with the impressive success so far, makes it a certainty that primary goal of maintaining a strong hold over its own domestic market.

In the export market, the Japanese will find the going tough against an extremely advanced and sophisticated industry in America and the strong nationalist pressures in Europe.

However, it is also clear that the Japanese are taking a very long-term view of the industry. And in the long-term, it would be a bold man who said they could not succeed.

M.W.

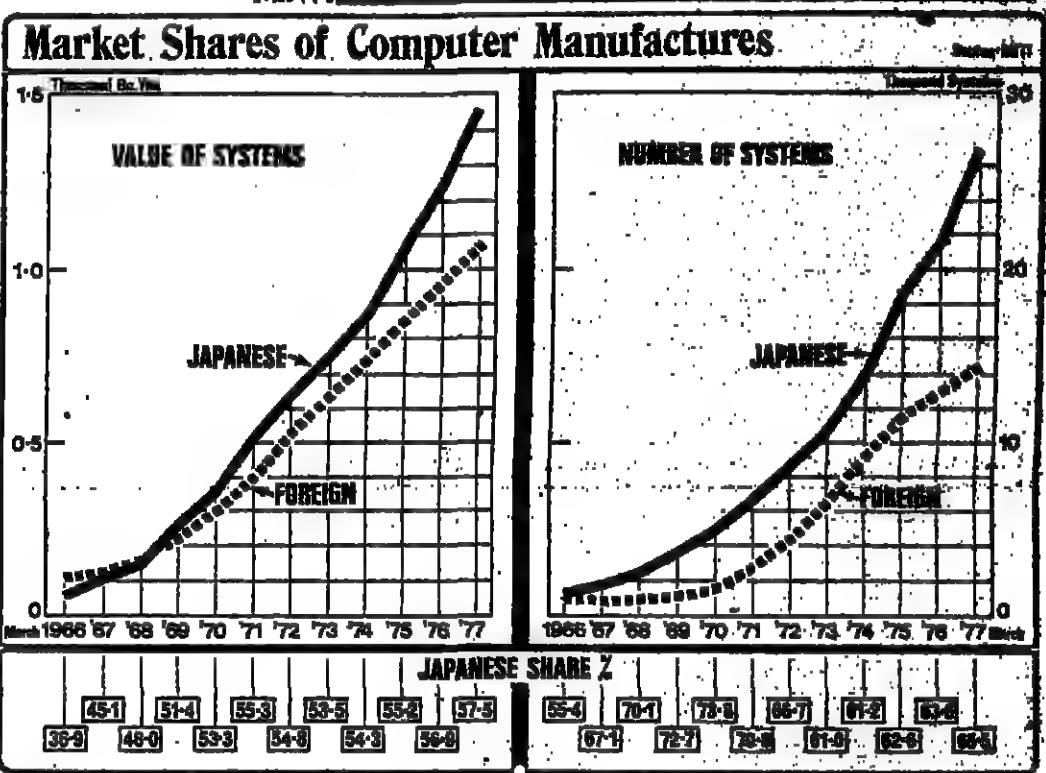


JAPANESE COMPUTER BASED COMPANIES

Industrial electronics sales % of total sales

Companies	% of total sales	1978
Fujitsu	24	1,024
NEC	22	1,019
Toshiba	22	1,170
Hitachi	15	1,046
Mitsubishi	25	972
Oki Electric	70	448
Omron Tateisi	75	441
NCR Japan	106	374
Nippon Univac	100	340
Matsushita Communication	55	240
Tokyo Electric	55	180
Kokusai	75	73

Source: Heisei Gakken



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Fast-growing 'desk-top market'

THE RISE in demand for personal computers has astonished even the more enthusiastic manufacturers, so that the small desk-top computer is now beginning to emerge as a highly important part of the industry. By 1982, Dataquest, the U.S. company analysts, predicts that the total market for personal computers in the U.S. will have risen to \$2.4bn a year compared with estimated calculators shipments of \$500m in 1978.

Only a few years ago the idea of a home or office desk computer was a mere twinkle in the eyes of a band of dedicated hobbyists and perhaps a number of professional engineers, eager to exploit the possibilities of programmable calculators, micro-processors and small mini-computers. But recently identifiable mass markets have emerged for products which are cheap, compact, and often have an extremely impressive amount of computing power.

Since the potential uses of very small computers are so varied, it is worth pausing to ask

exactly what a personal computer is. Dataquest defines it as a small desk-top computer intended to meet business, professional and home uses. Typically, personal computer products in the study range from \$15,000 down to a few hundred dollars. Applications range from business record-keeping and professional problem-solving to educational aids in schools and hobby home uses.

Personal computers developed with inevitable technological logic from the potentialities of the micro-processor and the rapid reduction of the price of memories and other components. As soon as the possibilities of making small cheap computers was grasped, a large number of companies in different fields started to think about the possible uses for them. As a result, the market now presents a confused spectacle with several different strands interwoven.

The main categories of use for small computers overlap. They are: for small businesses,

professional engineers and scientists and the general public. Two further categories have been identified which in the long term are expected to be less significant, although both are showing a healthy market at present. They are educational users and hobbyists.

Dataquest puts its estimate of the potential markets in the U.S. for each of these categories in the adjacent table. The figures suggest annual growth rates of about 50 per cent in the business, professional and education markets, and a huge 167 per cent a year growth for home computing.

In view of the complexity and size of the potential markets, it is not surprising that several very large companies with different backgrounds are now beginning to show an interest. Texas Instruments and International Telephone and Telegraph (ITT) are among the largest companies shaping up to compete in the home computer market, although Tandy, Commodore and Apple are the main

competitors in the field at present. At the same time Hewlett Packard has established a leadership in the supply of the more complex type of equipment for scientists and engineers, while International Business Machines (IBM) is reported to have exported 5,000 desk-top computers valued at \$95m last year.

Potential

Manufacturers are now converging on this fast-growing market from at least six different directions. First, there are the manufacturers of calculators, including Texas, Commodore and Olivetti, which are moving from the top range of programmable calculators, often including a printer, to make more versatile machines which are, in essence, computers. Then there are computer terminal manufacturers, which are reducing the size of their machines and adding to them intelligence and local memory. Eventually, some of these intelligent ter-

minals could become personal computers, especially for those who would like to link them to larger networks.

Third, consumer electronics companies are beginning to exploit the potential for adding a processor and memory ("intelligence") to the domestic television set to make it into a home computer. ITT in Europe, for example, is marketing the Apple computer as an adjunct to the television set.

Fourth, there are the hobbyist manufacturers which are moving from the do-it-yourself stage into marketing complete systems, usually to be plugged into a television set. Apple and Tandy's Radio Shack have both moved into the market from this route. Then there are the instrument makers, notably Hewlett Packard, which are bringing out desk-top computational applications, involving monitoring and controlling a range of instruments and performing calculations with the results. Hewlett Packard is also a maker

of programmable calculators, so that it is converging on personal computers from two related directions.

Last, there are the manufacturers of larger business machines, led of course by IBM, which certainly can be expected to make desk-top computers for the business market as soon as demand appears favourable.

Without doubt it is the enormous long-term potential for expanding sales to home users that is attracting the main interests of companies such as Texas and ITT. However, home and business use of personal computers probably will overlap to a considerable extent. A small businessman or shopkeeper, for example, may buy exactly the same unit as is used elsewhere for playing computer games in the home, learning programming or other educational purposes.

For example, Commodore, which has sold 25,000 units of its Pet home computer, estimates that 80 per cent have been bought by small businesses and schools, and the other 20 per cent by private users. The Pet is sold in hi-fi shops, alongside video-recorders, and cassette decks, as another consumer toy, yet one of its main markets has proved to be for processing accounts and for teaching people the elements of programming.

There now seems little doubt that computers can be brought down in price to start at £200 or £300, low enough to compete for the disposable income of a large number of the population. But the question remains: what would the average household need a computer for? There are a wide variety of applications, which probably will split into three parts: educational uses, pure entertainment and, in the longer term, control functions within the household. It is also possible that complicated "artificial intelligence" programmes could be made available for

medical diagnosis, legal consultation and even "psychoanalysis" by home computer.

First, the educational uses can be divided between programmes intended to teach and develop computing skills themselves and programmed instruction in other subjects. Increasingly, people will want to learn programming, either as a pure recreation or for possible use in their working life. The home computer's capability for giving programmed instructions will also be used for many subjects quite unrelated to computing. Programmes for teaching mathematics, history and even languages will be developed, probably in conjunction with correspondence courses and institutions such as the Open University.

Second, the entertainment possibilities of home computers will be extended from television games to all sorts of information related to other pastimes, as, for example, data and analysis related to football or racing.

Language

Third, home computers will be used to help household accounting, preparation of income tax returns, calculation of mortgages and as a convenient store for names and addresses and other data. Those who enjoy gimmickry will doubtless use the machine for switching lights on and off and controlling central heating, but most people probably will stick to the cheaper specialist gadgets for this sort of function.

The technology for all these applications is now being developed in the different Viewdata systems of which the British Post Office's Prestel is the first and the most advanced. Viewdata systems depend on linking modified television sets (or home computers) to a central computer data bank by means of the ordinary telephone network.

Viewdata computers can store programs as well as data, so that any home computer or a television with a computer attachment could obtain program packages for different applications. CAP-PPP in the UK has developed a system called "telesoft" based on its new business language, Micro-cobol, which will allow the same program to be used on a large range of different types of micro-computer. The system is rather inefficient compared with programs especially designed for a mainframe or mini computer because a substantial part of the processing power of the home computer has to be used for the operating system. This leaves less computing time available to execute particular programs. However, in practice this is unlikely to be a disadvantage because computing power and memory is becoming so cheap that its cost is already less significant than the cost of programming. Moreover, in most business applications, the processing time is very small compared with the time spent putting in information or printing out the results. Consequently the relative inefficiency of this type of universal system will not be noticed by the kind of user for whom it is designed.

The prospect, therefore, is that a large library of programs could be built up which home users would be able to hire very cheaply. Many of these programs will be written in such a way that the user is prompted by a series of natural language instructions and questions on his television screen. Therefore he will need only the most elementary knowledge of computing to benefit from them.

How long will it be before home computing with all these uses becomes commonplace? The answer to that question depends on the speed and skill with which software is prepared and marketed, and also on the development of the communications networks for home computers which can be used at a reasonable price.

The market probably will build up from a core of self-employed people who have substantial needs for record-keeping and accounting in their homes, but before long it is likely that the flexibility and potential to use the machine for helping the education of children and adults will make home computers as common as hi-fi.

The importance of peripherals

THE COLLECTIVE noun "peripherals," which describes the equipment used in conjunction with a large computer, has become misleading in almost every sense.

First, the equipment—including magnetic disc or tape units for bulk memory—is no longer peripheral to the main operation of a computer system, but an integral part of it.

Second, the value of peripherals is now generally much greater than that of the central processing unit itself. And, third, many so-called peripherals are now being given computing abilities of their own so that they can operate either in a federal system with a large central processor, or in some cases as specialised computing machines.

In the U.S., the revenues from peripherals and terminals together account for nearly 60 per cent of all revenues from computer hardware (that is, excluding programming (software) and services). This picture is reflected in Europe.

Hackintosh Consultants estimate that in 1979 the total com-

puter hardware market in the four largest countries, France, Italy, the UK and West Germany, will be about \$5bn. Of this about 70 per cent or \$3.7bn is accounted for by peripherals. Hackintosh also shows the substantial imbalance of trade in computer peripherals in Europe, with estimated imports by the four major countries expected to total \$800m this year.

This clearly reflects the dominance of the U.S. over many parts of the peripherals market despite European efforts to redress the balance.

The importance of so-called peripherals is especially emphasised in the new mini-computer based systems which are beginning to find a wide business market, and even more in the micro-computer systems which are following them.

Mini computers were designed originally for industrial process control and the main reason for transplanting them to business systems was that they were much cheaper than the larger machines they replaced.

Now computer processors are being etched on to a single chip

of silicon only a few millimetres square. These chips can be assembled with other circuits on to a single circuit board to make a complete mini computer for only a few hundred dollars. A complete system, however, costs thousands of dollars, mainly because of the peripherals which are required to make it carry out a useful task.

These peripherals can be divided into two broad categories: magnetic memory units and printers. However, terminals consisting of a keyboard and usually a television-like visual display unit (VDU) have to be considered in association because, in small systems at least, printers and even magnetic tape or disc units can be integrated into the terminal.

Magnetic discs are now developing in two directions. The smaller 5¼ in "floppy discs" have become steadily cheaper and more reliable, so that they are now beginning to displace cassette tape units on all but the very smallest systems. The floppy disc works in a similar fashion to the larger units, with

a spinning magnetic disc and a tracking head which can "read" or "write" on to any part of the disc and can move automatically to the required track.

Disc units have to be made with extraordinary precision to ensure that the head locates the desired track on the spinning disc.

The capacity of the larger 8 in discs has been continually increased, a trend which will continue as single-sided discs are replaced by double-sided ones. Currently these disc drives can store up to 370 megabytes of computer information (570m characters). That is equivalent to about 100m English words or a library of a thousand novels.

These units can transfer information to the central computer at a rate of between 800,000 and 1.8m bytes a second. The higher speed is the equivalent of about three large novels every second.

For larger bulk storage, magnetic tape units and magnetic drums are still used, although many medium-sized installations have no need to go beyond discs. In the next five years, magnetic bubbles will start to

make important incursions into the mass memory market, particularly in systems which have to be portable or must be exceptionally reliable. However, the continued improvements to disc units mean that bubbles are trying to hit a "moving target" in terms of performance.

The main development of printers in the next decade is expected to be the replacement of impact technologies mainly by ink-jet and laser Xerography methods. Print speeds are likely to continue to increase beyond the 200 characters per second achieved by the best matrix character printers today. The worldwide market for impact character printers is currently around \$60m, according to SBS Publishing of California, and will reach \$827m by 1981.

However SBS expects that, by 1985 only 30 per cent of high-speed printers will use mechanical technology. A description of one of the challengers, ink-jet printing, will be found in the article on office computers in this survey (page V)

M.W.

PERSONAL COMPUTER MARKET

	1978	1980	1982
Business	200	450	765
Professional	175	355	800
Home	35	300	675
Education	15	35	115
Hobby	75	85	75
TOTAL	500	1,235	2,430

Source: Dataquest.

M.W.

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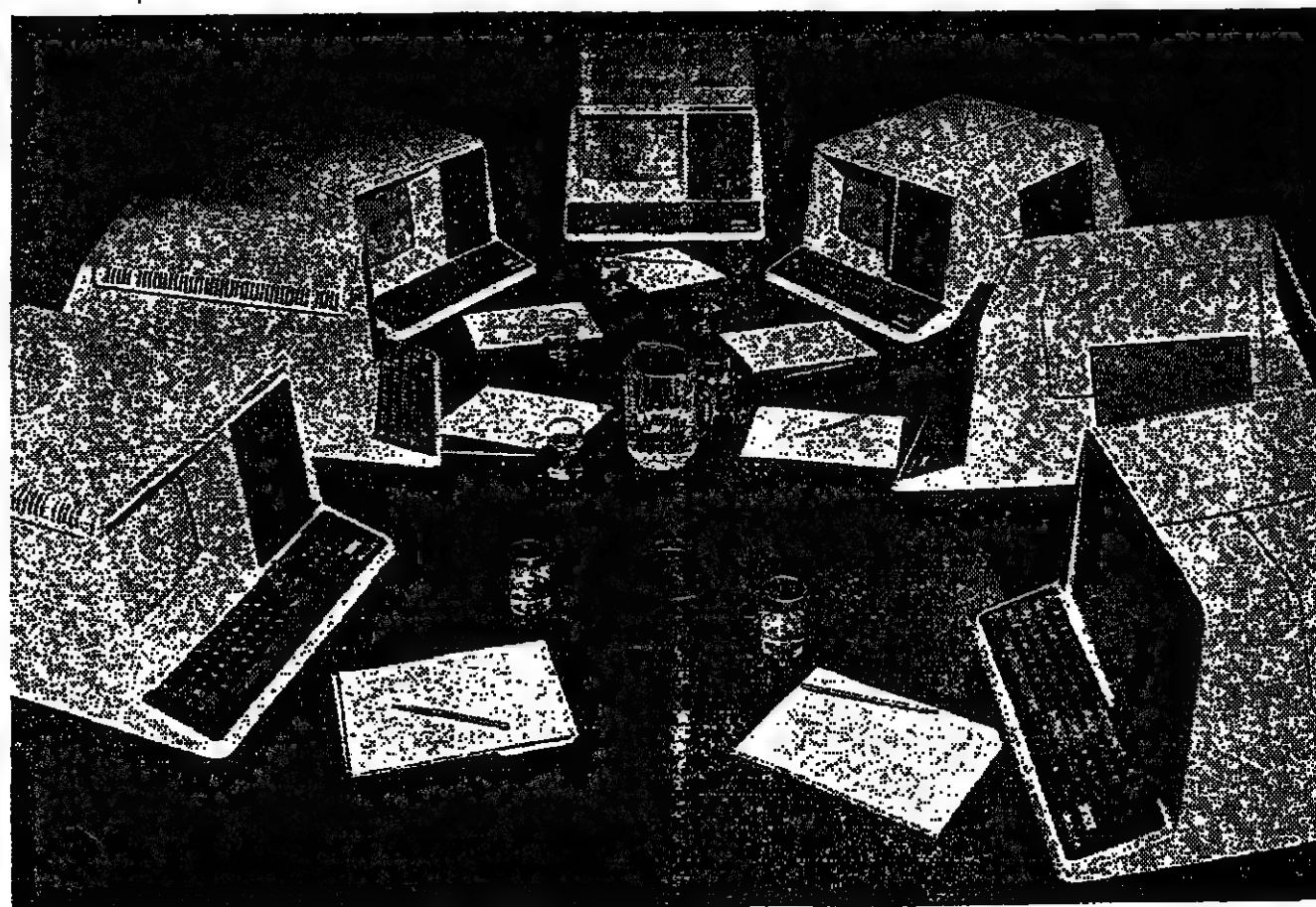
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THE COMPUTER INDUSTRY VIII

Smaller companies emerge

THE PATH along which the present day general purpose computer companies have evolved is littered with impressively large skeletons.

General Electric, the Radio Corporation of America (RCA), Xerox and Philips are among the strong companies which tried to enter what they believed would be a crucial market in the new technological age.

But despite their financial strengths all of them failed, often very expensively. The reasons for their failures were diverse, but all had a common thread: the difficulty of financing a very high level of research and development, and efficient support and service organisation and rentals from a market where the margins were determined ultimately by the overpowering presence of International Business Machines. The companies which have survived the shakeout all had to demonstrate some extra qualities of management technology or marketing strength.

However, since the fall of the Titans, a new generation of relatively smaller companies has started to emerge as challengers of the established forces in the computer market. Having learned the lessons of the last decade, they are avoiding the pitched battle with IBM and the other established companies which would result from trying to offer a completely new range of large computers as an alternative system.

Since all the major customers now have large data processing installations in operation, it is

obvious that no completely new challenger could hope to prise much business away from established suppliers if a change were to involve all the expense and inconvenience of re-programming and transfer to a new system.

The new entrants into the computing market have therefore had two possible routes open to them. The first, taken by companies like Amdahl and National Semiconductor (in their different ways) has been to build machines which operate from an external point of view like IBM machines. It is possible for the smaller companies to ride on the crest of technological developments, of semiconductor components faster than IBM can. They have therefore been able to offer computers and add-on memories with substantially better performance and lower prices than IBM. By agility, they have kept ahead of the giant and obtained a most respectable slice of the market.

The other route for aspiring entrants to the computer markets was opened by the development of the micro-processor at the beginning of the decade. Simple micro-processors have been developed in the last two years into sophisticated micro-computers consisting of only a small number of components on one or two circuit boards. The semiconductor companies which were making the components, quickly realised that their customers which were putting boxes round the electronics and

marketing them as office systems, were adding a very large amount of value and profit.

At the same time as technological advance was increasing the complexity of components, the price was being driven inexorably downwards. The component suppliers foresaw therefore that they would be pushed further and further into a corner in which they would be supplying a shrinking proportion of the value of total systems.

Most of the major companies have therefore started to move into the computer market itself, starting with relatively modest micro-computers, mini-computers and office systems. In all cases, the logic of this move has forced the companies to place a greater and greater emphasis on developing total systems including software.

Emphasis

These semi-conductor companies will not generally be in a position to challenge the systems capability of the large mainframe companies for a long time if ever. Nor, probably would they wish to. The general shift of emphasis in the market towards networks of smaller machines, each with considerable local processing power, is providing ample opportunity for the newer entrants to challenge the power of the big battalions.

Intel, Fairchild, Texas Instruments and National Semiconductor

have all entered the mini-computer market, and are all developing strategies for an attack on the office systems market. Motorola is alone among the largest semiconductor companies, in having as yet announced no plans to move into the sale of minicomputers. Its policy so far has been based on the idea that, as a component supplier, it should not compete with its customers, the computer makers. However, in the face of strong competition from almost all its rivals, Motorola is being forced into a serious review of its position.

Among the latest contenders, National Semiconductor and Hewlett Packard are, perhaps the most interesting, although the impressive strength and determination shown by Texas Instruments must never be underestimated.

National Semiconductor is attacking the market with great vigour from two directions. In 1975, it bought a small company called Exsysco, which had been started by a breakaway group of ex-IBM engineers to make IBM compatible mainframes. Only a year later, it had shipped its first system to Intel, the company's first computer. Now National has shipped about 200 machines, employs 400 people on this side of the business and is planning to double the size of its plant this year. Even more significantly, it is working on the development of a machine which will emulate the largest IBM computers.

At the same time, the com-

pany has developed an office system called System 400, which is also IBM-compatible, but which is designed to sell on its own merits in the large and widening market for small systems. Although National is expecting to achieve sales in its computer division of \$200m in the next year or so, it realises that it is engaged in a win or lose race to achieve "critical volume" before it is overwhelmed by its competitors. By the phrase "critical volume" it means sales of \$400m to \$500m a year, which is thought to be the minimum needed to sustain the research and support network required for a viable computer operation.

Another example of a semiconductor company which is moving into computing is Texas Instruments, which is developing its own family of mini-computers and micro-computers. Fairchild is aiming to win a stake in the IBM-compatible market through its 30 per cent stake in Magnavox. Meanwhile, Hewlett Packard is moving into the computer market from the different direction of scientific instruments and calculators. It has designed a complete office system which is certain to be a strong challenger at the lower end of the market.

Designs

Similarly, Dutch Philips, TTT, the General Electric Company (UK), Siemens of Germany, and Olivetti of Italy, and several other large companies have designs on the office market. Although the computers which they will be selling are small by present-day standards, it must be remembered that they are the size and power of large mainframe computers of only a decade or so ago. The office sector of the market has some special characteristics which are dealt with elsewhere in this Survey.

In addition to the semiconductor companies which are moving into computing, the larger corporations converging on the office market, and the IBM compatible manufacturers in the large mainframe market, there are the software companies, some of which are now beginning to emerge as significant independent forces in the market.

This is a result of the continuing trend for hardware (machines) to become ever cheaper, while the cost of pro-

gramming (software) continues to rise. Software now represents well over half the cost of many complete systems, and in a few years' time it may be three-quarters or more, according to some estimates. Consequently, software houses which have designed a system for a particular application, particularly a complex system, using standard mini-computers, may buy in hardware for resale in a complete systems package. From this point, it is a comparatively small step to start manufacturing some of the hardware to adapt the system for special purposes.

Logica and Systems are two British examples of software companies which have followed this route.

Thus, new companies have entered the computing market from several different directions. Taken together, they make the choice very much wider for a prospective purchaser than it was a few years ago. The Diebold Research Programme, for example, estimates in its Research Report E167 (Diebold, 5/8, Argyle Street, London W1) that a typical larger company is now dealing with about twice as many computer vendors as it was 10 years ago.

The cost and complexity of developing then operating systems for large mainframe computers is likely to prohibit even the largest companies outside the computing industry from trying to force their way back into the market. Indeed, the forces which caused the demise of RCA's General Electric and Xerox's computing operations are as potent as ever. On the other hand, the rapid developments of technology, allowing enterprising companies to find many profitable sectors of the industry without confronting the largest companies head-on (even the plug-compatible manufacturers are only competing with IBM hardware in selected parts of its range).

On the other hand, it is very likely that industry will see the entry of some very big companies indeed over the next few years. The giant AT and T could, for example, become an important rival to IBM. It would be to obtain a change in regulations which prevent it from competing in the computer market. If that should happen — and it is still a large "if" — well, anything could happen.

MW

Unemployment debate lacks information

THE DEBATE about the employment consequences of the so-called micro-electronics revolution has not yet reached anything like a serious level.

So far, there is very little to go on: Government reports and Ministerial speeches by and large content themselves with the view that those who predict terrible consequences are "exaggerating." Trade unions or academics, suspicious of the technology, tend to magnify the suddenness — if not the size — of the impact.

It may be that even after the next four or five years, when the technology has had time to impinge itself upon working life and labour demand, no one will be any the wiser about its total effect, or any more able to make predictions.

What is much more likely is that a number of case histories will have been built up; and it will be more possible to say, for example, whether the automation of clerical office work normally means a net job loss or not.

Ignorance of the outcome does not entitle the official training agencies, employers or trade unions to stand by helplessly while the changes occur. It is to the Government's credit that it has done so much to encourage debate about micro-electronics and started to spend money on special training programmes to find the personnel to manage the technology.

Part of the £100m that the Government has set aside for the industry over the next three

years is to go on training another 3,000 computer software experts by the autumn of this year.

Some of the trade unions, too, have begun to teach themselves about micro-electronics and to devise policies for coping with it: that process is certain to intensify. For the moment the lack of real information has left them with little choice but to prepare for the worst, despite official declarations that there is no sign of an employment holocaust.

Attitude

The official attitude is summarised by the Central Policy Review Staff, in this extract from its report on the social and employment consequences in November last year: "We have yet to be convinced that a micro-electronics will be a major factor for the worse, unless the general prospects for employment make for increased unwillingness to accept technological change."

The report said those who had predicted substantial unemployment — figures of 3m to 5m have been quoted — did not back their forecasts with convincing analyses. They also tended to overestimate the speed at which traditional jobs would be displaced by the new products. Furthermore, said the CPRS, the last "computer scare" proved a false alarm: there were in many places (such as the civil service itself)

net job gains after computerisation, although the rate of increase in employment was probably lower than it would otherwise have been.

The CPRS also takes the somewhat optimistic view that technological change has always been associated with higher economic growth and rising real incomes. "This could be equally true of micro-electronics," it says.

Although microchips would mean higher productivity — less workers to produce the same output — there would be a new range of cheap, mass-produced goods and new services that would stimulate employment generally.

But the CPRS report qualifies its cautious optimism in one or two passages in such a way as to sound a serious warning.

First, it points out that there will be, whatever happens, a serious employment gap in the 1980s, for demographic reasons. Britain is trying to find jobs for large numbers of new entrants to the labour force already, quite apart from trying to prevent the loss of its industrial base.

Secondly, it notes that Britain has been relatively weak in the past in exploiting new, cheap, mass-market products: and it is from exploiting these markets that much of the employment growth would have to come.

Thirdly, it warns — as do all the reports that have come from Whitehall in recent months — that the consequences of not

adopting the new technology rapidly will be far worse for employment than any of the consequences of adopting it.

These two latter points explain the considerable scepticism with which the CPRS report has been received by trade unions. Unions such as the Association of Scientific, Technical and Managerial Staffs and the white-collar section of the Engineering Union, TASS, have seen enough evidence of decline in traditional UK manufacturing industries in recent years to be less than sanguine about the extent to which new technology will halt that decline.

Broadly speaking, they find the CPRS view a complacent one. They doubt that the analogy with the computer revolution is a fair one: computers were, and are, expensive pieces of capital equipment. Employers have taken their time in introducing it. But microprocessors are cheap and allegedly all-pervasive.

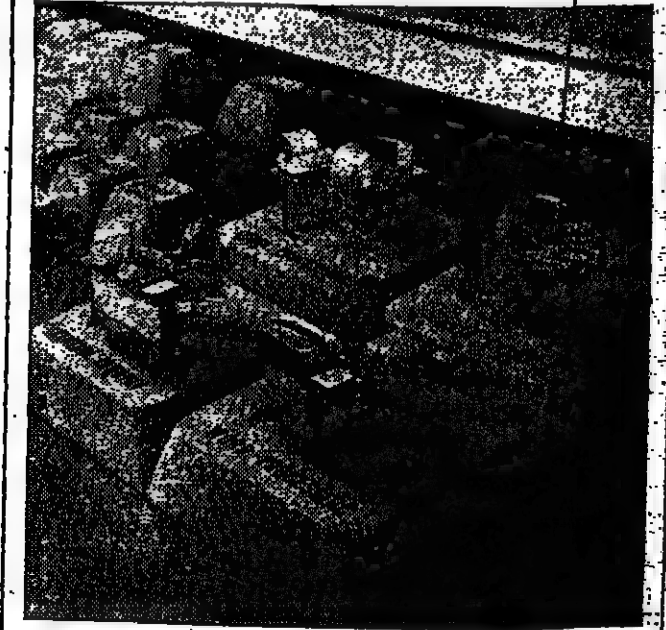
Unions argue that companies will quickly be able to calculate their savings in labour costs when the microelectronic equipment is brought round by the salesman.

U.S. experience of the automation of offices seems to suggest so far that employers are attracted more by the sheer productivity gain than by any saving in staff: but the theory is little tested — there — and in Britain scarcely at all.

More obviously, there is the

CONTINUED ON FACING PAGE

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THE COMPUTER INDUSTRY IX

Cost is makers' dilemma

COMPUTERS HAVE progressed marvellously in recent years; computing has advanced hardly at all. Today's machines are smaller, cheaper, more powerful and more reliable than their predecessors, often by orders of magnitude, yet these benefits derive from increasingly sophisticated micro-electronic circuit fabrication techniques and economies of scale in manufacturing rather than any fundamental changes in the way computers compute.

In fact, according to Glenford Myers of the IBM Systems Research Institute, New York: "Except for a few machines, for example some of those made by Burroughs Corporation, there have been no advances in the computer architectures of current systems since the 1950s."

What is more, there is little demand among computer users for such advances. Such is the size of the investment users have made in existing conventional hardware and software that there is no real prospect of radical change in the foreseeable future.

Nobody is anxious to repeat the experience of 1964 when IBM launched the System 360 series. Although a remarkable technical advance, it involved users in time and expense because programmes had to be rewritten to run on the new machines.

So computers will continue to get smaller and cheaper but if there are remarkable technical advances they will be well hidden from the user. Therefore, the question of future trends in computer technology can be seen as: what are the realistic limits of miniaturisation, and how will computer manufacturers respond to the problem of selling equipment which is becoming worth less and less very rapidly?

We are very far from the limit in micro-electronics. The silicon chips which lie at the heart of computer memories and processors are fabricated at present using optical methods and visible light to print patterns on the surface of the silicon. The practical limits using such techniques are close to being reached, although with further refinement it should be possible to use visible light to create a chip with the complexity of the 64K RAM—64,000 individual units of memory on a single chip.

Proven

X-rays or electron beams can be used to create even smaller elements. IBM scientists have already created a wire with proven electrical integrity with a diameter of only 150 Angstroms (half of one millionth of an inch). However, there are those who believe that for all practical purposes, the limits set by visible light are adequate.

For example, Iann Barron, director of strategy for Immos, the NEB-backed micro-electronics venture, believes that the 64K RAM level of complexity is adequate to build a complete "computer-on-a-chip"—processor, memory and connections to the outside world—and it is this that he sees as the key technological development. He thinks it is so important that to describe it he has coined a special name, "transputer," derived from transistor and computer.

But whether semi-conductor companies stick at the level of the 64K RAM or invest time and the considerable resources necessary to achieve greater complexity on the chip, there is no doubt that the power of computer systems will continue to go up, while the cost will continue to come down. It is generally reckoned that the improvement in cost performance is doubling in less than five years.

Or to put it more graphically, George Champagne of Sperry Univac calculates that in 1960, the cost of one man-hour of labour would buy the execution of 1.5m instructions or the storage of one megabyte (8,000 individual items) of data on direct access storage for two days. In 1977, Champagne goes on, the cost of one man-hour of labour would buy the execution of 225m instructions or store one megabyte of data for 15 weeks.

Another equally graphic illustration is the 4300 series which IBM released only three weeks ago. Data processing specialists are still arguing over whether these machines represent simply a stop-gap or a whole new series. What is certainly true is that they are stunningly cheap and cost effective compared with existing products. For example, the top-end 4341 processor runs at about 1.7 times the speed of the existing 370/148 but the complete system costs only about as much as a 370/138.

The dilemma for IBM—which supplies about 70 per cent by value of all the computing machinery in the world—is how to make money out of kit which regularly doubles in performance while halving in price. All other manufacturers, if they are to stay in the game, are in the same boat.

There is a view that IBM and other manufacturers are waiting

Rank	Company	Estimates for 1977		Reported data	
		DP revenues \$m	U.S. DP revenues (% of total revenues)	1977 total revenues \$m	1977 net income \$m
1	International Business Machines	14,765	81	18,133	2,719
2	Burroughs	1,844	87	2,127	315
3	NCR	1,574	82	2,222	144
4	Control Data	1,513	86	2,301	63
5	Sperry Rand	1,473	45	3,270	157
6	Digital Equipment	1,059	100	1,059	109
7	Honeywell	1,037	36	2,911	145
8	Memorex	405	90	450	56
9	Hewlett-Packard	402	30	1,360	122
10	TRW	390	11	3,264	154
11	Kel	286	71	402	32
12	Data General	255	100	255	29
13	3M	240	6	3,980	413
14	Automatic Data Processing	238	97	245	23
15	Xerox	209	4	5,077	407
16	General Electric	200	1	17,519	1,088
17	Amdahl	189	100	189	37
18	Computer Sciences	170	75	235	12
19	Storage Technology	162	100	162	11
20	Texas Instruments	160	8	2,046	117

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for people who spend \$5,000 today on equipment that would have cost \$50,000 five years ago to discover that they cannot make it work—and then make their money through selling the necessary software.

Software—the programs which run the computer and run the applications loaded on to the computer—is the single element of computing systems which is not declining in price, but in fact, relative to the price of hardware, becoming more expensive. With unbundling, the separate pricing of hardware and software, it is expected that manufacturers will make their money out of providing the software to run their hardware that will cost

relatively little. Murray Lever, former board member for technology for the Post Office, describes this as "zero cost data processing." He also describes software as "pure crystallised labour."

Cumbersome

There are suggestions that with its 4300 series, IBM will move towards the total unbundling even of operating software—the software that runs the computer system. But above all, 4300 series points to the computer room of the future. In the past, computer rooms were vast, custom-built

affairs with false floors to hide away the bundles of cables which shackled the machines one to another and water-cooling equipment to remove the heat built up during processing.

Eugene Amdahl, formerly IBM's chief computer designer, showed the way round these problems with machines compatible in terms of software with IBM but using advanced technology. He was able to air cool his large processors rather than use cumbersome water coolers.

The 4300 series points the

way to medium-sized machines which fit unobtrusively into the ordinary office and which require no special fittings. It means, for example, fixed disc mass-storage devices which are relatively tolerant of poor operating environments and an end to tape storage (which is not), though there are those who wonder how a security back-up can be provided without a tape fall-back.

Considerably research is already being carried out in reliability of computer systems and it is perhaps no coincidence that in the past two years the

British Computer Society's Awards for technological advance have been won by projects in this area. In 1977, there was Prof. Brian Randall's work at Newcastle on systems which recover from failure and in 1978 Dr. Roger Needham's work at Cambridge on the CAP projects, a machine and an operating system proof against accidental or malicious damage.

Computer systems of today work in a linear fashion, that is they process instructions one after another in the manner of a model first set by John von Neumann, one of the fathers of modern computing. There are a number of research efforts in progress to improve on this scheme of things. At a number of British universities, researchers are attempting to implement "dataflow architecture" where there is a network of machines through which data flows. Processing occurs when data arrives at the strategic points.

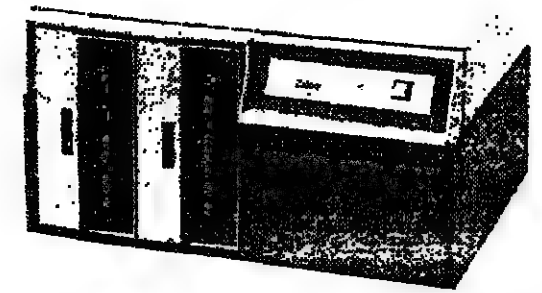
Then there is the brilliant ICL-distributed array processor in which processing elements are intimately associated with memory, making possible parallel processing.

It is intended for very large processing problems—meteorology and the like—and is used with ICL's biggest computer, the 2980. But returning to the original point of users' dislike of change, there is no doubt it could be used for simpler things, and Ed Mack, ICL's director of product strategy, would love to see it used to run a payroll.

Alan Cane
Editor, Computing

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Employment

CONTINUED FROM PREVIOUS PAGE

possibility that many of the jobs created by micro-technology will not be in the older industrialised nations, such as Britain, that are looking for industrial regeneration. In other words, much of the displacement of labour could be in the form of job exports—traditional manufacturers failing in the West and the new manufacturers springing up in the Third World.

Thus, the net job effect may be a positive one, but will it revive struggling industrialised nations such as Britain?

Any worker displaced by cheap imports of textiles, motorcycles, television sets in recent years will take a pessimistic view of Britain's ability to seize and hold new markets. Incidentally, the suggestion that the cold shower of competition will invigorate British industry is no longer fashionable—perhaps because the cold shower signally failed to have the right effect when Britain joined the European Community.

Rapid

Today's prognostications are less joyfully worded; a very large conditional "if" is attached to every forecast. For example, the latest Treasury bulletin on the economy, devoting its main article to micro-electronics, has this to say:

"In both manufacturing industry and services there will be job losses due to higher productivity or the outdating of existing products; and in some cases these effects will be substantial and rapid."

"But against this, jobs will be created in the production of silicon chips and in software systems and applications. Early replacement of plant and machinery with new equipment

Christian Tyler

THE COMPUTER INDUSTRY X

Towards thinking machines

"Banks today are planning for the eighties and beyond. Philips are in a position to share our view-point."



Banks have always been closely involved with new developments in computing. Many major advances in data processing are the result of co-operative relationships between the banking community and its computer suppliers.

The Philips PTS 6000 Financial Terminal System is a good example. Originally developed by Philips in co-operation with a leading European bank, the PTS 6000 system has now become the world's leading range of financial terminal equipment, with 25,000 cashiers in banks, building societies and local authorities.

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AT STANFORD University in the sunny valley between the Pacific and San Francisco bays, some 200 postgraduate students are working on the problems of how to make computers artificially intelligent.

Work on the project is now so far advanced that many hard-headed companies are beginning to take more than a passing interest. Indeed they are so interested that they are offering large salaries to the best students to tempt them into corporate research laboratories.

In several other university centres and in the research departments of large corporations like International Business Machines, a ferment of activity has been generated by the possibilities of using "artificial intelligence" in the commercial world.

This may seem strange, even implausible, to those who have a nodding acquaintance with the series of failures encountered by researchers into artificial intelligence during the last few decades. Even some of the apparent successes, however, seemed to demonstrate the inherent limitations of computer programming as a simulation of the methods of the human brain.

One colourful example was the programme called ELIZA, developed by Professor Joseph Weizenbaum at the Massachusetts Institute of Technology, to simulate psycho-analytic sessions.

The computer was so good at "psycho-analysis" its "patients" that Weizenbaum discovered that many people regarded it as almost human, and even requested private interviews with it to give confidential information and receive support. The computer program, of course, showed endless patience in asking questions, and was cleverly designed to remember some of the patient's answers and bring them up later in the conversation.

When the program became generally known in 1966, Professor Weizenbaum found to his horror that many competent medical authorities were recommending that ELIZA, or computer programs like it, should be widely adopted in hospitals and clinics as an aid to the treatment of patients. However, the creator of this Frankenstein therapist knew that his program was in a very fundamental sense a fraud. The ELIZA program did not even have an "understanding" of natural language, let alone of the intricate human problems which it was supposed to be asking questions about.

As Weizenbaum explains in his book "Computer Power and Human Reason" (Freeman and Co., Reading) the program depended upon a series of clever "tricks" which enabled certain words or phrases to trigger off seemingly intelligent responses from the computer. Weizenbaum

had in fact chosen the psycho-analytical model for his program because it provided a context in which words are used rather vaguely and in which the computer could always issue a vague prompt like: "Give me an example," or "Tell me about your father," when stumped for an answer.

For this reason, the ELIZA program could not be transplanted outside psychoanalysis without producing ludicrous results. Similar objections applied to many other and more sophisticated attempts to simulate certain aspects of human behaviour. A programme called PARRY, for example, was developed by K. M. Colby which gave a very passable imitation of a paranoid patient under interview. However, one of the reasons for the success of this programme is that whenever the questioning becomes so keen that the computer gets out of its depth, it can simply revert to one of the ideas fixes of the assumed paranoid personality.

PARRY, like ELIZA, demonstrated, in some respects, the limits of possible understanding by computers. They showed that computers can manipulate language plausibly in certain limited contexts, but they cannot "talk" sensibly unless they have a thorough grasp of the subject matter under discussion. For that reason, much of the linguistic analysis which has

been undertaken by artificial intelligence workers, although interesting in itself, is considered by many researchers to be leading up a blind alley.

This point was emphasised by a spectacular programme written by Perry Winograd and described in his book "Understanding Natural Language" (New York, 1972). The programme called SHRDLU enabled the computer to direct an artificial hand by means of a television camera eye to change the positions of a number of boxes and pyramids on a table. Moreover the programme was able to respond to commands in natural language, like "Move the red pyramid onto the larger red box." It could deduce the sequence of manipulations that were necessary, including the moving of other objects in the space. It could describe what it had done, explain why and give a complete account of the configuration of all the objects within its field of view.

Possibilities

Even more interestingly, the computer could learn new concepts within its limited world. For example it could learn that a pyramid placed on a box represented a "steeple" and could learn the syntax of ownership: "This steeple is mine. That one is yours." Furthermore the computer was able to make quite complicated inferences. On the command "Put it down," for example, SHRDLU was able to deduce from the previous context which object the word "it" referred to.

Programmes similar to SHRDLU have been developed for industrial use, but usually their purpose is mechanical manipulation or assembly rather than intelligent thinking. From the point of view of artificial intelligence research, the SHRDLU experiment showed that a computer could indeed behave as intelligently as a human being in an extremely limited conceptual framework. When SHRDLU is transported out of its tiny world of coloured blocks and pyramids, however, the programme is completely unable to cope.

The conclusion which was reached by Winograd and by other workers is that development of computer intelligence should start less from an effort to reproduce generalised intelligent abilities, but from a very

clear definition of a relatively limited task within a certain field of knowledge.

From this perception has developed a range of so called "expert programmes" whose aim is to simulate the analysis and advice which would be given by a human consultant when faced with a specific problem. One fruitful area is medical diagnosis, where expert programmes are already proving to have good performance when the results of their diagnoses are measured against the opinions of live consultants.

One of the most fruitful of the modern approaches is through what is termed "rule based programming." This means that the computer programme is built round a set of rules, which the computer calls into play rather in the manner of a bureaucrat in a civil service department. The application of one rule will trigger the use of another rule, which will in turn bring other rules into the problem. The computer will work methodically through the structure set out by the programmer, but because of the rapidity of its operation, the route it will take could not easily be predicted by a human in advance.

Once an expert programme has been set up, it can be applied with some modifications to different fields of knowledge. It builds up its detailed armoury of facts and methodology by first interviewing a real live expert.

In the case of geological testing for oil, for example, the computer will ask the live expert about all the physical and chemical tests which should be made, the order in which they should be made and the further tests needed, depending on the results obtained. Then finally it will ask how to assemble the results to predict the likelihood of finding oil and its whereabouts.

When the computer expert program has obtained and codified all the information which it needs from the human expert, it is ready to give consultations. An oil company prospecting for oil would, for example, be taken through a routine of question and answer by the computer on the basis of what has been made, and would then make a prediction about the likelihood of striking oil.

Although the computer program can never display genius or intuition, it does have the

advantage over a human expert that it is tirelessly methodical and never forgets even the slightest scrap of evidence which it has been told. In very specific applications, therefore, the computer program may be as reliable as a human and as much cheaper. Similar programs are being developed for military applications where they may be able to give extremely rapid up-to-the-minute assessments of the resources of arms and men available to a commander in a particular theatre of war, and even to make an assessment of the tactical situation which faces him.

One of the main tasks at present is to devise systems which will allow non-computer experts to ask the system unexpected questions, which would normally be handled by an intelligent aide. For example, a general may wish to ask "what if reinforcements are delayed two hours?" The computer must reply with the consequences for supplies of ammunition, food, communications, and probably much more besides. The general may not be satisfied, however. He may want to ask: "How did you reach that conclusion?" An intelligent aide could answer that question whereas many computer programmes could not. However, the application of rule based programming allows the computer to tell the general which rules were applied in reaching the conclusion. From this he can estimate the assumptions, and perhaps test them by asking further questions.

From this an "intelligent" conversation can be built up, and although the computer would never show the dash and inspiration of say, Napoleon, it might have given him some useful cautions on the logistics of marching to Moscow.

Such systems are now beginning to emerge into commercial significance, largely because of the continual fall in the costs of computer processing power and the computer to tell the general which rules were applied in reaching the conclusion. From this he can estimate the assumptions, and perhaps test them by asking further questions.

These systems are a long way away from the general purpose humanoid robots of science fiction. But some of the systems look sufficiently life-like to give serious pause for thought.

M.W.

Europe lacks a united front

CAUGHT BETWEEN the need to be gentle with powerful implanted offshoots of multinationals and the ever-present threat from Japan, Europe's officialdom, and senior civil servants in the various member countries in constant contact with Brussels, have yet to present anything like a united front in the computing industry.

True, great advances have been made so far as the service bureau and software industries are concerned. But these are manufacturer-independent and brain-intensive to a high degree,

and there is the rub. As soon as a hardware producer, especially in these lean times, can claim to show that government or supra-national authority actions are threatening him, or even hampering him, then he will win a hearing and will be able to bring powerful lobbying action to bear.

Last year's report and plan for action in advanced components prepared by Mackintosh Consultants primarily for the German Government, but consulted by all European authorities, has had little, or no effect towards producing a Common Market approach to the data processing problem, despite the crucial importance of advanced components for the development of processors and their memories, as well as the discs, printers and tape decks which serve them.

As in the early days of computers, the approach remains narrowly nationalistic and no one in Government appears to be providing "national" companies to seek European bedfellows—the trend has been, and still is, to conclude some form of alliance with an American partner despite the difficulties and dangers of operating in that market.

This is not to underestimate the difficulties of planning and executing a European-wide approach to an important problem—indeed the experience of the Comecon countries with the much-delayed Rind series of computers made in several of the Eastern bloc nations, but coordinated from the USSR, shows how difficult a multi-country approach can be, despite the tighter planning control possible throughout Comecon.

Failure

It would be wrong to blame the Eurocrats and dishonest to attribute the failure of European ventures entirely to Gallic pride. Both major parties in Britain must take some responsibility for the failure of at least two European-oriented proposals.

ICL was on the point of acquiring or merging with Machines Bull with a dowry, or purchase price, of about £90m just before the advent of the last Heath Government. But as IRC (Industrial Reconstruction Corporation) was anathema to the Conservatives since it was a Tony Benn brainchild and as IRC was the marriage broker, the project failed.

And who, under the Wilson Government, prevented the close association between ICL and Unidata (Philips-Siemens-CII) that would have made of that group the European and international force it never became?

True, ICL management had come to fear and detest mergers, with good reason. But ICL would have been by far the most powerful partner in the grouping and that quartet, with backing from the areas in Europe spending the most on computer installations and applications, would have enjoyed a "captive" market comparable in some degree with that provided by the U.S. Government through General Services Administration.

It is still not too late to achieve greater unity of purpose. The justifying figures for such action are there for any politician or civil servant to consult. Whether they are culled from forward computer projections, or from growth of micro-electronics, the inference is the same. In the latter case, it

appears that as matters stand and whatever is done this side of the Atlantic, by 1985, American companies with their worldwide ramifications will hold 45 per cent of the market, Japan 35 per cent and Europe the rump.

But the rump would still be worth a great deal — the European market for active components alone in 1982 will be close on \$4.9bn, according to Mackintosh—and this includes large scale integrated circuits and microprocessors. That is worth fighting for.

The same study group puts Europe's total computer market in that year at \$11.2bn — considerably below parallel American projections. That again is worth fighting for — but one knows already that 80 per cent of the European market is pre-empted by U.S.-controlled companies.

Meanwhile, among the Europeans, France is not doing too badly with possibly as much as \$500m. The black to be expected this year from computer operations, while Britain's computer balance for 1978 could be \$300m and more in the red.

Officially, for 1978, the French companies working in sectors outside large machines increased their turnover by 25 per cent to FF7.2bn.

This covers minis and peripherals of all types including data capture equipment, add-on memory, floppy discs and the like.

Growth in the French controlled sector, spurred on by the "contracts for growth" awarded to five groups under the Plan Péri-informatique, is likely to be at better than the 28 per cent rate experienced over the last 18 months or so since the full effects of the "plan" began to be felt.

This is because the Government, last December, put a further £270m into the national economy to encourage the use of many of the products of this industry throughout education, as well as in office equipment for companies of all sizes and in industries in general.

Through Siemens, which has had the lion's share of Government computer support funds over the past ten years, Germany can claim a reasonable proficiency in microprocessor technology. Siemens has displaced IBM in many important German governmental and industrial sectors. But its impact on the rest of Europe, except perhaps in process control and machine tools, is negligible.

Siemens has to some extent solved its inability or unwillingness to tackle IBM on very large machines by agreeing to support big Hitachi "Chinese copies" of the top of the range IBM machines. Whether this will be any help in the rest of Europe remains to be seen.

The other Europeans have no real significance in large machines. But Philips, though battered by its huge losses in that area, is nevertheless the biggest supplier of small business machines in Europe and, worldwide, the biggest supplier of banking terminals.

DataSAB from Sweden is supplying financial terminals or small computers that have military reliability and Norway, through Plessey, is marketing the fastest military micro-processor so far built.

There is plenty of talent in Europe and new markets that the new world covets. It is time for European companies to stop bidding for moribund U.S. firms and put their EEC house in order.

T.S.

Computer and Office Equipment Surveys 1979

The Financial Times is planning to publish a number of Surveys on Computers and Office Equipment. The titles and proposed publication dates of those planned are listed below. Other titles may be added during the course of the year.

April 19	CALCULATORS
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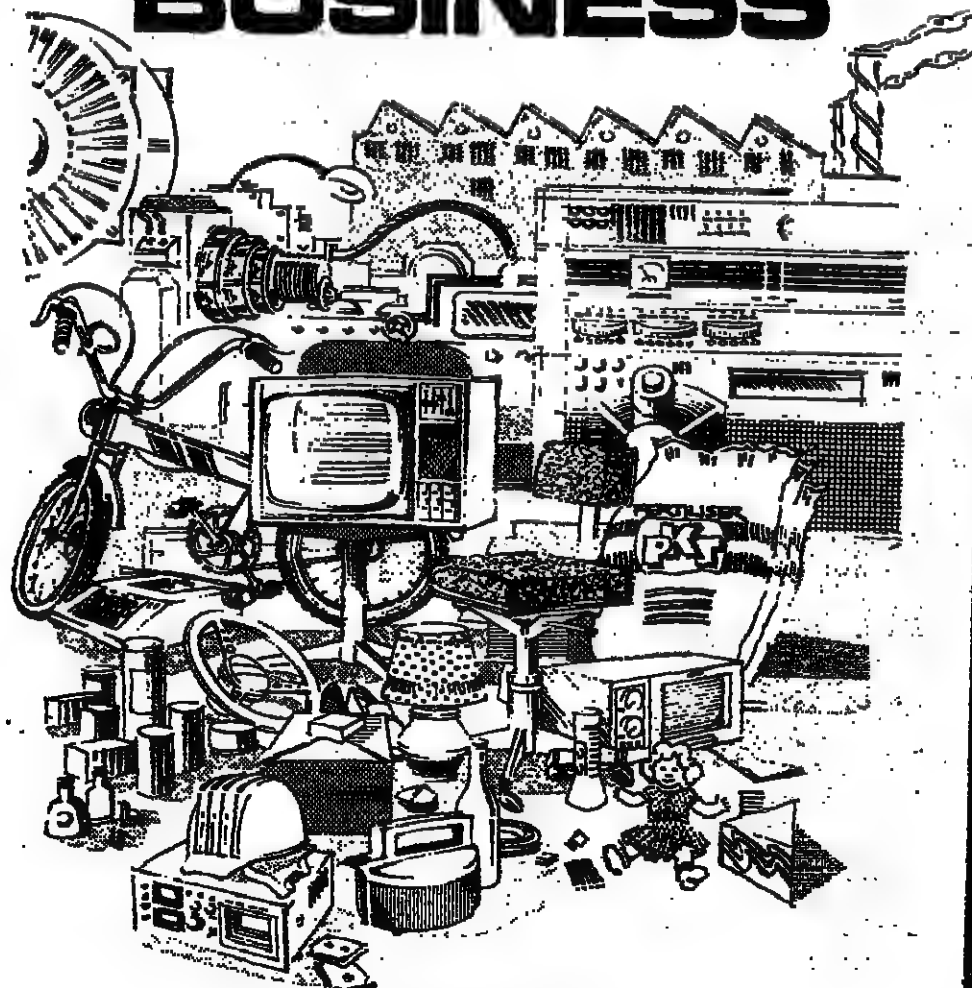
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THE COMPUTER INDUSTRY XI

Banks unhappy with systems offered

ANY TERMINAL equipment supplier wanting to make an impression on the banking sector could do worse than spend three weeks in the company of Mr. Gordon Hague, general manager of Lloyds Bank's management services division.

The banks have resources to support large investment in computer systems, and an enthusiasm for growth which can be satisfied only by using these systems. But Mr. Hague feels the British and Continental banks are neglected by computer equipment suppliers.

He comments: "The greatest problem we have at the moment is that manufacturers' design staff sit in their little cubby holes in the north east corner of the United States and design equipment without finding out what the customer in the UK or Europe wants to do."

He says equipment offered to British banks is generally designed to suit the needs of U.S. banks, which do not face the telecommunication problems posed by the branch systems in the UK.

"That's a fundamental problem and I've banded every manufacturer pretty hard."

"The Board of one of the big computer companies came round. They were fascinated. They hadn't seen a problem quite like it: connecting 4,000 terminals in the branches to four computers with an inter-

face between all four computers. "We had to go to an outside organisation to get switching equipment designed."

He believes companies which design mainframes and terminals should also design the control and switching equipment to go between them. And he believes they should pay more attention to the market. "They don't come and say: 'Can we spend a week or a fortnight, or three weeks with you and let one of our people study the job? It's frightening, isn't it?'"

Staff

Lloyds and other banks in the UK have used computer systems effectively in sustaining a rate of expansion which implies a doubling of their business every eight to 10 years. In the early 1960s, staff at Lloyds Bank could manage up to 350,000 cheques in a day. Now the bank handles up to 2.25m a day.

National Westminster has increased its staff by about 7 per cent since 1970, while its volume of transactions has grown 7 per cent each year. Recruitment has been concentrated on overseas activities rather than the domestic operations, where computerisation has greater relevance.

Mr. Brian Kyte, head of data

processing at NatWest, says computers have helped staff by taking over the drudgery and by evening out the workload. The bank has not been tempted to match its intelligent machinery with less intelligent staff.

"We have not gone recruiting junior people who can only work a machine and whom we would not like ever to meet a customer," he says.

While the banks have increased their capacity without proportional increases in staff by using computers they are increasing their availability to customers and relieving the pressure on office space by installing card operated electronic tellers.

Suggestions that the banks should co-operate in the development of a shared electronic teller system, so achieving greater distribution at lower cost to each bank, were dismissed by the banks of the banking sector. They see this equipment as a means of gaining a competitive advantage over their rivals.

Mr. Trevor Nicholas, general manager's assistant at the management services department of Barclays, says the electronic teller schemes are too far down the line for the system to be put on a non-competitive basis.

But the banks are co-operating on the next step towards

the "cashless society"—a study of an electronic funds transfer system which would involve the installation of terminals at points of sale. These would enable customers to pay retailers without using cash or cheques.

If the banks went their own ways they would not only have to bear enormous costs alone but would have to convince retailers to accept the installation of a separate terminal for each bank.

As it is Mr. Nicholas expects the question of who will pay for the system to be a stumbling block. "The study is nowhere near deciding on costs, but there will eventually be a lot of discussion about who pays for what."

He says that another aspect of the system which will need careful attention is whether the idea of instant payment is sufficiently popular. He points out that some businesses survive on cash flow.

And for all the enthusiasm displayed for electronic funds transfer in some quarters the cashless society is still a long way off. Mr. Nicholas finds evidence for this in the fact that although cheques and credit cards have been around a long time more than 80 per cent of transactions are conducted with cash.

Paul Smith

Larger memory devices

MICRO-ELECTRONIC memories have impinged on the public consciousness in the UK in the past year, in part because the Prime Minister has given micro-electronics the official status of constituting a revolution, in part because Imms, the semiconductor company which is funded by the National Enterprise Board, has cautiously announced that one of its major products will be an advanced semiconductor memory of the type known as the 64K RAM.

At the same time, the joint venture between the UK General Electric Company (GEC) and the U.S. company, Fairchild Camera and Instrument, to produce GEC/Fairchild has said that it, too, would be making advanced memories, though initially they would be of the type known as CCD.

Finally, a number of companies in the U.S. and Japan, have over the past year or two, shown a growing interest in a type of memory which is increasingly known as the magnetic bubble, and which in certain respects is claimed to be superior to the types referred to above.

There is thus some confusion presented to the observer of the memory market, and indeed it appears that there is confusion in the market itself. However, most commentators and industry analysts agree that the market, in the U.S., Japan and Western Europe, for semiconductor

memories over the coming years will grow rapidly, possibly very rapidly.

Since a major market for memories is in computers, both mainframe and mini-computers, then these hopeful projections depend to a considerable degree upon an upward trend in computer sales.

That, too, appears to be the case. IBM's own hunch is that the computer market is set for a new growth take-off, a hunch confirmed by a number of reports and analyses. For one example, a report by consultants Booz Allen Hamilton for the Scottish Development Agency reportedly identified computer peripherals as the fastest growing electronics sector.

Further, if the trend towards distributed processing, which many see as the key one in the field, is to gather momentum, then there will be an increasing demand for more and more logic and memory in devices which will be deployed in more and more operations, both in the office and in the factory.

Again, the progression towards all-electronic, computer-controlled telephone exchanges—represented in the UK by the still-experimental System X—will also constitute a major growth market for memories. It is with this perspective, indeed, that the semiconductor manufacturers are establishing bases in Europe, especially in

the UK, or expanding their existing bases: all of them see, or hope for, significant growth in the West European memory market in the 1980s.

However, the developments in memory technology are, paradoxically, likely to be rather slower in the years ahead. Memories are measured in units called "bits": in a few years, the density of memories has leapt from a few hundred bits in the mid-1960s through 1,000—or 1K—bits to 4K bits, to 16K bits, which is currently the "industry standard." The densities are quadrupled each time because it is not considered worth making a major innovation with less than four times the density of the current standard.

Now, the major technological struggle is the introduction of a 64K device which will, in its turn, become the "industry standard." A number of companies have brought such devices on to the market, or are about to do so. The Japanese company Fujitsu was one of the first to do so, while Fairchild has had a 64K CCD memory (see below) in production for some time.

IBM has introduced its own 64K RAM (as usual, for its own use) and PTE is testing its 64K RAM, as is Texas Instruments. Next year, the 64K will begin to displace the 16K, and the latter will begin to enter a declining production period after some

years of strong increase (though there will still be a multitude of uses for it, as there still are for the 4K and even the 1K: no one entirely displaces the previous innovations).

However, while the expertise in the manufacture of memories continues to grow, and while storage capacities will continue to grow while all about it—as access time and power dissipation—continues to shrink, still it is believed that this year will mark the end of the linear growth in memory size, with an effective quadrupling of storage size every two years. The quadrupling process is now seen as taking three or even four years.

This will take different types of memories in different ways. Until the advent of the bubble, the CCD or charge couple device memory, was the most dense. There are now 64K CCDs in production and shipping (Fairchild is the leader in this technology) and a 256K bit chip is expected next year. However, a 1m bit chip—the next stage.

As for the RAM, or random access memory, now arguably the most popular storage device, the 64Ks are only now in test, a 256K RAM is not expected before 1981/2, and a 1m bit RAM will be in the mid-1980s, or later.

But speeds are increasing, and the traditional speed edge enjoyed by the static RAMs is beginning to be eroded by the dynamic RAMs. The dynamic RAMs are themselves getting faster, and will soon be challenging the older, bi-polar technology, which has kept in the race because of superior speed. If RAMs get close in speed, then the considerable extra cost of bi-polar chips will seem less and less worth paying. Still, bi-polars are fighting back—they are also speeding up and, more importantly, are using less power.

Yet it is the advent and growth of the bubble which has caused most excitement in the memory scene in the past year or two, especially since the new devices offer higher packing densities than RAMs or even CCDs, and show themselves to be rapid and reliable, too.

Magnetic bubbles have been under development for the past two to three years, and first began to come into systems late last year. They came in with high densities—256K chips were produced by the U.S. companies of Texas Instruments and Rockwell, while the U.S. companies of Intel and National Panasonic and Japan's Fujitsu and Nippon Electric are also bringing out 256K models.

Mackintosh Consultants, the international electronics consultancy, was an early enthusiast for bubbles in its report, "Serial Memories in Europe and the U.S." published in June, 1977, seeing magnetic bubbles as offering the advantages of low cost, small size and an absence of moving parts, as well as the high densities. The company believes that bubbles will find increasing application in computer terminals, and will come to be more and more used in small business computers. While 256K devices go into machinery, the 1m bit bubble is expected to be tested next year, or even this—Rockwell has promised a 1m bit bubble chip by late 1979.

John Lloyd

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THE COMPUTER INDUSTRY XII

Increasing demands for security

THE HUMBLE telephone has created a series of troubles for businesses in relation to confidentiality.

The most common problem stems from masquerading. After inadvertently revealing bank account balances to credit checking agencies, the banks are now more careful.

The general method of reducing masquerading to minor proportions starts with the "calling back" routine. In this step, the information is not given at first request, but is only revealed when the proper registered telephone number of the alleged caller is rung back and it is then established that the information is, indeed, being requested. This measure does not prevent all masquerading, but it helps to reduce the problem. It is due to this type of common difficulty that the world of business understands the necessity for computers to adopt similar practices when interrogated by remote terminals.

If a computer system using remote terminals holds valuable data, then it is now standard practice for terminals to be "called back" in this way to prevent fake terminals masquerading as real terminals.

Having decided that the central computer is firmly connected to a real terminal, it is probably safe to allow searching and retrieval from the files. Well, nearly safe, but first the transmission link must be protected by the encoding of the transmitted dialogue.

This encrypting can be useful to protect against any eavesdropping on the circuit, but it cannot be used as the sole method of protection. For encryption by itself tends to reinforce the credibility of an inquirer who uses it and so makes a security penetration much more dangerous, unless it is supported by other rules and procedures.

A plain language telegram from a business agent can be regarded with scepticism, but if it is encoded correctly, then the firm to which it is sent may give the message uncritical acceptance and this encrypting trap must be avoided by computers in use through networks as a source of information.

Expressed in the language of business, this problem is referred to as the authentication aspect of computer executed transactions.

Two sides of this job can be

clearly seen—the first existing when the parties are in live contact through the computer network, and the second when the parties are using the network as a postal type delivery system, so that sending and receiving occur at different times.

The literature of specialist studies in this topic is growing, almost by the hour, and some side-effects of this encrypting interest have become very apparent. For only a few years ago the career of any specialist in coding theory was likely to be made either in the university world or with defence establishments.

Serious

Suddenly, in recent years, the safe transmission and reception of messages from automatic banking terminals, building society pass book terminals and other samples of electronic methods of filing and accounting has become a serious issue.

Now these major commercial organisations, and the suppliers of computing networks in either equipment or design fields, have a brand new set of career openings for what was formerly an esoteric subject—cryptography.

Traditionally, an elaborate encrypting method was devised and connected to individual use through the selection of a secret key. Given that the key remained a secret, any use of the key gave an assurance of confidentiality and genuineness for messages passed this way. It is still believed that there is much to be said for this approach, yet, in addition, there has been devised a new set of schemes for coding which use two keys—one of which is public and one secret.

Basically, the public key is used in transmission and the secret key in reception—the theory is that knowledge of the public key gives no clues away to the make-up of the secret key.

However, many problems still need examination in using either system. For instance, in the two-key system, when the secret key has been undermined in some way, an organisation will need to change both keys. This involves discarding the old public key at some instance of time. This act of change could lead to invalid transactions being attempted, which would normally have to be repeated with the correct key. However, it gives the opportunity for

ducking the acceptance of unwelcome transactions through assertions about the exact time when the key was "disowned."

The proper registering of public and valid keys therefore becomes a social organisation issue. Typically, it is such social issues which determine the shape of computer networking inter-connections in future business practices.

Following the simple notion that many organisational computer networks can be linked together, the so-called electronic funds transfer operation, for example, is now held to be in some doubt. The genuineness of transferring existing bits of paper is an understanding which has been reached over several centuries of business practice. The same understanding does not readily exist when electronic signals are used to complete business transactions.

Some of the problems are technical, but most of the crucial issues will derive from behavioural patterns which can hardly emerge unless systems are built — an option which seems much like a gamble — or after much study and the use of imaginative simulations and tests which indicate clearly what patterns of behaviour are likely in full scale usage.

The early use of signature strips on credit cards, for instance, exploited plain paper which was easily replaced by a fake version in the hands of professional fraudsters.

The security of computer stored data has been highlighted by the privacy debate. The connection between the two issues demands new standards of business behaviour, both within the computing organisation and also, between the world of business and the public—as a consumer of services and a supplier of data.

It is reluctantly accepted by enthusiasts for interconnected computer networks that a flow of false or corrupt data could seriously undermine the usefulness of such networks. It is readily recognised that if this "bad" data referred to an individual then it could damage them in a serious way.

There is no clear view of what the position is when a business organisation (or some other legal entity) is the subject of data flows based on bad data. However, every user of computer stored data is likely to be painfully aware of the need for this data to be both accurate, and also hitched

to a control over the period of its validity.

Where the possession of data, of any kind, gives a competitive advantage to an organisation, the need to keep close scrutiny on such material has also long been apparent. For example, some of the seismic data held by oil exploration teams is thought to be of immense commercial value.

Thus, the sum of the embattled computer users' interests relating to stored data can be grouped as follows: the quality control issues of integrity,

currency and validity; the assurance issues of protection, security and authenticity; and the social issues of meaningfulness, intent and usage.

Coupled with this formidable list is the need to gain public confidence through proper privacy measures, the exposure of computer criminals, and the humanity of computer systems which are also of commercial benefit to the business world.

Oddly enough, the apparently inbred use of performance measurement tools by computing managers is of enormous

value in helping to resolve the policy priorities of top business management in dealing with polluted data processing.

Although the foundation of these firms, such as Tescata, arose purely from the need to tune up the cost effectiveness of the "plantroom" housing the computer, the continuing boom in this business reflects many auditing side-effects.

The special difference between a data processing plant manager and most industrial plant managers rests on the

quality control problem. A poor industrial plant produces scrap output which can be seen from instrumented flaws in the process steps. The audit trail is not an adequate or comparable set of instruments when data is processed.

Numerous computer centres have set out to measure the performance of their machines, simply to increase the throughput. However, during this measurement phase they have frequently been forced to investigate "oddities" in the

throughput which have led to thorough audit investigations.

Sometimes the final result is just an improved design for program sequences, but on some occasions it has led to the exposure of dubious practices within the firm as a whole, or the computing centre itself. Excessive interrogation of stored data by remote terminals is readily spotted in this way, for instance, but more subtle weaknesses also come to light.

Hedley Voysey

The 'plug compatibles' market

IBM "PLUG COMPATIBLES"

are computers, made by a variety of (non-IBM) manufacturers, which can operate according to the instructions contained in IBM software. In essence, plug compatibles are copies: they are making a good living for the manufacturers by being good copies, which can, they claim, deliver what IBM machines can—as efficiently, as rapidly, as accurately—and often cheaper.

Mr. Gene Amdahl, at one time a director of design at IBM, started it all when he formed the company which bears his name and which reckons to manufacture one fifth of all mainframe (that is, large) computers now being shipped—a much higher proportion than anyone, apart from IBM, that success has come in just over three years.

Amdahl's idea was possible, as much else is, because of the rapid advances being made in semi-conductor technology. Because both micro-processors and semi-conductor memories were being made which had higher and higher densities at lower and lower costs—that is, they could perform more and more functions more rapidly and cheaply—a new company could challenge IBM by making a computer which operated according to the same software, did the same things, but did it much more cheaply. That is exactly what Mr. Amdahl did.

So Amdahl units—and now others—can be purchased by a user with IBM machines to extend his system. It can be run on IBM software and if IBM fights back with a new machine

which attracts the user back to his original supplier, he can go back with no compatibility problems.

Further, he can buy an Amdahl machine first and be assured that he has compatibility with the biggest system in the world. It seems that the plug compatibles have found the ideal market, one created by someone else which continues to dominate it, and whose growth in no way hurts their own—or has not yet.

Imitators

Mr. Amdahl himself has spawned a number of imitators—one of the more successful being his own son, Carlton, who is vice-president of the Magnusson Corporation, based on a plug-compatible concept which Mr. Magnusson Jr thought up for a doctoral project at the University of California at Berkeley.

Others include the established semi-conductor manufacturer, National Semiconductor, Cambridge Memories and another brand new company, Two PL. Yet another, Electronic Memories and Magnetics, is thinking of moving in on the market, too.

The first competition in the plug-compatible business came at the large mainframe end: Amdahl went up against the larger models of IBM's 370 series. Now, it seems that the newer plug-compatible companies want to compete at the smaller end of the market, with the less powerful models in the 370 series, where most of IBM's customers are.

IBM responded initially to

this competition in classic fashion—by cutting its prices. In 1977, it brought out its 303X series, which were largely similar to the 370 range but considerably cheaper. Amdahl seemed undismayed by the move—it announced price cuts in its range very soon afterwards.

Last December, IBM slashed prices again, cutting incremental memory prices by 30 per cent on purchase and 20 per cent on rental. Only Intel, a leasing corporation for plug compatibles, immediately responded with price cuts of its own. Amdahl said it wouldn't cut, while others simply said nothing. It was expected that the imitators' prices would tend to drift down in the course of time.

However, catching its competition on the hop was not, in the view of a number of IBM watchers, the only reason for the price slashes. IBM was almost due to announce its long-awaited "E" series to replace the 370—it was unveiled earlier this month—and it was thought that it wanted to lower the prices so that the subsequent improvement in price performance which the "E" series would usher in would not seem too dramatic, and therefore not annoy too much the recent purchasers of 370 machines.

The "E" series, widely billed as the "answer" to the plug-compatible manufacturers, was partially unveiled at the beginning of February with the introduction of two machines in a new range called the 4900. The two machines are the 4331 and the 4341. The range starts with the 4331 model II, with a

purchase price of \$85,000 and a monthly rental of \$1,882; the II has a half-megabyte memory. It is reckoned that the price performance of the two new machines are between five and eight times greater than their predecessors.

At the same time, the company presented a package of consumer goodies such as peripherals, price cuts on a number of 370 machines, purchase, lease and rental charge cuts, and extension of a 34-month leasing plan to the machines just introduced. IBM—like its sister giant, AT and T—clearly is set to woo its clients rather more ardently than it has in the past.

However, even more significant for the plug-compatible market was thought to be a technical trend begun by the new machines. In their case, for the first time, some operating instructions are wired in to the hardware; that is, they are no longer on written-down software which can be bought and copied. IBM is reportedly letting it be known that they will apply this technique to its mainframe machines—which effectively means that the "E" series, and further developments from it, will not be able to be imitated—at least, not by present means. If the company's prospective customers believe this, it may deal the plug compatibles a blow.

These competitors claim (a) that IBM cannot bring in this or any other innovation too fast, because that would annoy the existing users; (b) any price cuts it makes will be more than matched by the plug com-

patibles and crucially (c) wiring in the software into big mainframes is too complex to be done properly, and that the threat of doing so is just bluff. That has yet to be tested.

Yet the competitors don't seem too worried, and part of the reason is that it has become clear over the past year that the demand for extra computing power is almost insatiable, much larger than IBM itself had estimated. Other competing, non-compatible companies, such as ICL of Britain, is estimating a doubling of its sales in the next four to five years (in ICL's case, from about \$500m to \$1bn).

Argument

It is in this demand on which the competitors can thrive, almost irrespective of what IBM does in the short term. Besides, they have another card up their sleeves: if IBM does hit back too hard: anti-trust suits, to which a giant like IBM is especially vulnerable. It seems that IBM and its swarm of imitators will have to get used to living with each other for a while yet.

Indeed, there is an argument recently developed; that it is gold for IBM to have these plug-compatible manufacturers about, especially at a time of a hungry world market. The argument goes that the plug compatibles, where they get new sales, are actually creating future markets for IBM, assuming the company creates the equipment the market place wants.

John Lloyd

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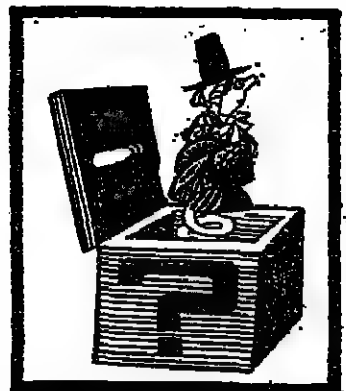
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The devolution debate in Wales . . .



An uphill task for the Yes men

WALES IN theory ought to give a resounding "yes" to the proposed Welsh Assembly in the referendum on March 1. In practice things could be different even though the Government in London, the Labour Party, the Welsh Trade Union Congress, the Liberal Party and Plaid Cymru are all campaigning hard in favour of the devolution proposals.

Only the Conservatives among the main political parties in Wales are officially campaigning against, and they have not had a majority of seats in the principalities since the extension of the franchise in 1887. Even today, they hold only eight of the 36 Welsh seats at Westminster. In the last general election they secured less than 20 per cent of the Welsh electorate.

The idea of devolution is not exactly new. Although the Wales Act is the first to reach the statute book, Bills calling for Welsh home rule, an elected assembly and Welsh parliament were tabled in Westminster in 1891, 1892, 1895, 1914, 1922, 1955 and 1968, but got no further.

The Liberals embraced Welsh home rule as a policy until their landslide victory in 1906. Keir Hardie, founder of the Labour Party and MP for Merthyr Tydfil between 1900 and 1915, included Welsh home rule in his election addresses. The Labour Party itself was finally committed in 1945.

The establishment of a Welsh assembly would also be no more than a logical development in

the way the government of Wales has developed since the post of Minister of State for Welsh Affairs was first created by the Conservatives in 1951.

One of the first acts of Mr. Harold Wilson's Labour Government in 1964 was the creation of the Welsh Office in Cardiff and a Secretary of State for Wales with cabinet rank.

Since then, whole areas of government responsibility as they affect Wales have been bled off from Whitehall to the Welsh Office. Wales now has its own multi-purpose government department with exclusive responsibility for roads, education (except universities), the health service, housing, agriculture, the environment, the arts and industrial development. Between 1964 and 1978-79, the Welsh Office budget has gone up from £48,000 to over £570m. In addition, there are over 60 nominated bodies or Quangos (non-governmental organisations) appointed by the Welsh Secretary of State to spend a further £450m of public money. At present, many of them are simply not answerable to the general public.

Another factor which might be expected to underlie the proposed Assembly to the Welsh is the promise of local government re-organisation. The sweeping changes introduced by the Conservative Government of 1970-74, introducing county, district and community councils, remain widely unpopular in Wales. The referendum offers an early opportunity for reform since the Assembly is a mandate in the Wales Act to

re-examine the local government structure, though any legislative changes would be carried out by Westminster itself.

That points towards another aspect of the Welsh devolution proposals which might possibly have won them additional support. The Assembly is to have executive powers only. All legislative power over Welsh affairs will remain in the hands of Westminster, substantially weakening the argument that the Act is on the slippery slope to separatism.

Compared with the devolution of powers which has occurred

of the total vote in Wales at general elections.

This pre-eminence is reflected in the two organisations campaigning in favour of devolution. The umbrella Wales for the Assembly Campaign contains the Liberals, Plaid Cymru, the Communists, the odd Conservative and an array of non-political figures like Sir Gariant Evans, the baritone, Mr. Barry John, a rugby player, and Max Boyce the entertainer, but it is headed mainly by Labour spokesmen. In addition, there is an official Labour Party-Wales, TUC - Co-operative campaign dedicated to winning the back-

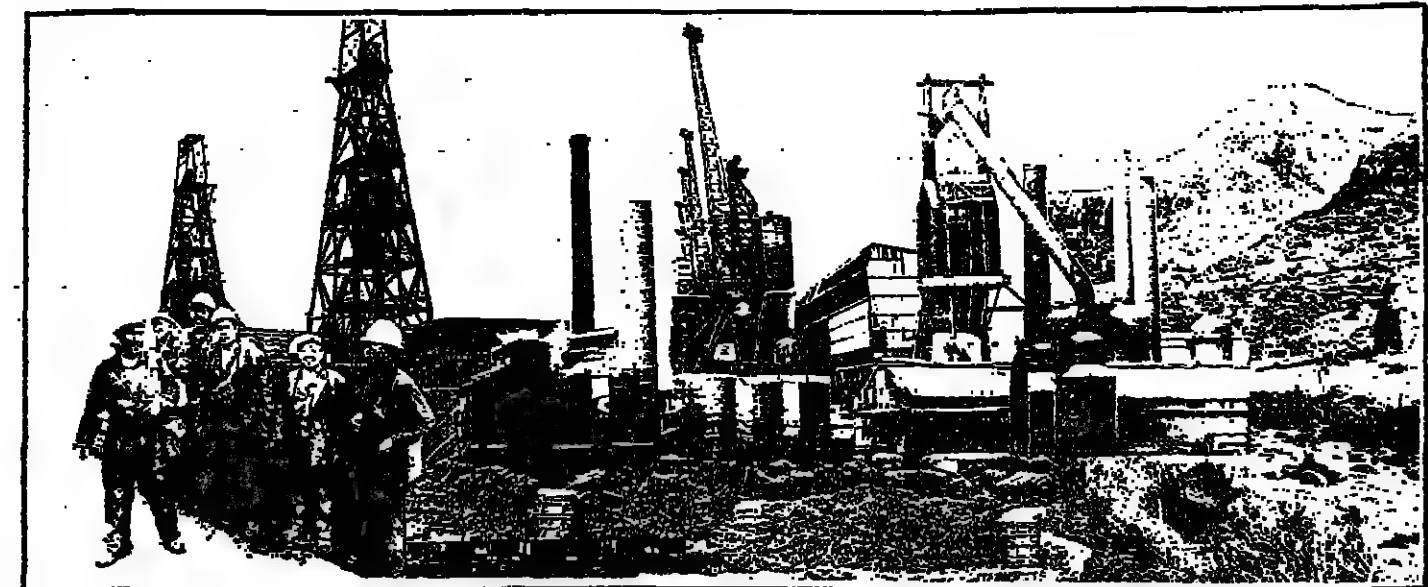
By ROBIN REEVES, Welsh Correspondent

In some other states in western Europe, the Welsh Assembly would represent a very modest degree of decentralisation of government and local democratic decision-making. For all this, the signs are that the "yes" campaigners will be lucky to scrape home with a bare majority, let alone the support of 40 per cent of the electorate required if the proposals are to go through automatically. A BBC Wales opinion poll published just over a week ago found that only 35 per cent of the 99 per cent who intended to vote were planning to say "yes". Over 45 per cent intended to vote against, and 21 per cent were "don't knows".

The fact is of course that the devolution issue cuts across party lines. Since all in the Labour Party which, in recent history, has had a bold on half

ing of traditional supporters for the Labour Government's policy. The weakness of the Conservative in Wales is reflected in the absence of a separate Tory campaign. Instead the party organisation is working within an umbrella No Assembly campaign without the resources made available to devolution opponents in Scotland.

But more important may attach to the Labour No campaign headed by Mr. Neil Kinnock, Mr. Leo Abse and four other South Wales Labour MPs opposed to the Assembly. The devolution battle will be won or lost in the industrial south. Half of the Welsh population of 2.7m lives within 40 miles of Cardiff. The vociferous opposition of the Gang of Six, as they have been dubbed, went largely unanswered during the recent passage of the Welsh



Assembly legislation through Parliament. It has clearly given them a head start in the battle for the heart and mind of the traditional Labour voter in the south.

The official Labour Party trade union campaign may also have miscalculated by making, as its main platform, the need to democratise the devolved, bureaucratic tier of government already running Wales. Not only is an extension of local democracy low on the list of Welsh voters' priorities, but the opponents of devolution have in their favour the unhappy experience of the Conservatives' reorganisation of government and the unfulfilled benefits of Common Market membership held out in the EEC referendum. The evidence of the polls suggests that the main reason people are set to vote against the Assembly is that they feel it will involve extra costs and merely create yet another tier of government.

As the campaign has developed economic arguments have inevitably come to the fore. The pro-devolutionist case is that the Assembly will cost no more than 4p per person per week and that it can bring more jobs and a higher standard of living to the people of Wales. This is claimed to be so because the message of areas of responsibility to be devolved to the Assembly would

be matters like housing and health, where Wales has actually been receiving less than the share of public expenditure which its population—5.1 per cent of the UK—entitles it. Indeed, on the basis of need, Wales ought to get more. It has by far the worst housing stock of any region and greater health and infrastructure needs than most.

Overall public expenditure in Wales is higher than England or Scotland but the "yes" campaigners stress, the above average share is in areas like unemployment and social security benefits which will remain the responsibility of Whitehall and Westminster and which will be unaffected by the setting up of the Assembly.

In its own areas, the "yes" argument runs, the Assembly will increase Welsh bargaining power in the fight for a just share of resources from London and Brussels. Extra jobs and a higher standard of living would flow both from this and political muscle added to the public enterprise activities of the Welsh Development Agency and the Development Board for Rural Wales.

Yet, without oil in the Celtic Sea, the economic argument is obviously more difficult to get across than in Scotland, particularly when set against the basic message of the opponents of devolution. This argument is

that England subsidises Wales and that the setting up of the Assembly could eventually call this largesse into question.

There are also less prominent, but perhaps decisive, reasons why the Welsh seem to be reluctant to embrace the Executive Assembly. Wales has always been a nation divided by geography and, more recently, by economics and culture.

Today, Wales is a society which a Welsh minister once described as "too far from God, and too near to England." The decline of the traditional coal and steel industries and the influx of English and multinational industry, the decline of organised religion, rural depopulation, immigration (one in five persons living in Wales was born elsewhere), the powerful influence of predominantly Anglo-American mass media, and better transport communications—all have served to undermine further a Welsh identity kept intact over the past 400 years by little more than a language, culture and tradition.

Equally, these trends have provoked a vigorous backlash. The growth of Plaid Cymru is its most visible form in political terms, but to a greater or lesser degree, it pervades every corner of Welsh society. The net result is a community full of

debates, tensions and differing interpretations of what constitutes Wales and Welshness and how they should develop.

The debate centres on the position of the language, now spoken by only 20 per cent of the population. Barely 15 years ago, the language showed every sign of disappearing quietly. Today, it may still be losing ground in the rural heartland, but it is also enjoying an astonishing revival. Welsh language and bilingual schools are springing up all over Wales in response to grass roots pressure, particularly in the anglicised South but this revival gives rise to conflict and fears among an English-speaking majority which the opponents of devolution have not been above exploiting.

Few people in Wales would want it simply to become part of England. But it is because there are so many conflicting ideas, over the nature of the Welsh identity and how it is best to be safeguarded economically and socially that pro-devolutionists argue that Wales needs its own political forum. It would arbitrate and give constitutional expression to the conflict in Welsh society.

Whatever happens on March 1, which is the day of the patron saint of Wales, St. David, the issue of devolution in Welsh politics is not going to go away.

Patterns of trade

From the Senior Representative UK Hong Kong Trade Development Council

Mr. Lloyd-Jones (February 12) agrees with the World Development Movement that protectionism is not the answer to the textile industry's troubles and then proceeds to put the case for an orderly development of world trade in textiles. I think an orderly development of all world trade essential. Trade and services redistribution is the solution towards easing the problems that have been created by self interest and political action.

The UN Conference on Trade and Development, through the ninefold of GATT negotiations, has attempted over the years to improve conditions in the Third World by agreed formula agreements, which tend to assist the established producers rather than under-developed or developing producers. This is obviously an unresolved permutation.

I have been involved in general trading activity over the past 35 years. I have found that dominant suppliers have existed during the whole of this period, sometimes with changed control due to amalgamation etc. In developed countries of Western Europe, the U.S. and the Far East, and a co-ordinated purchasing and marketing policy has been necessary to provide the correct mix of the ideal range to meet consumer choice. At no time during this period has anybody succeeded in changing the pattern of trade on an orderly basis, although many have attempted to do so. I have always found textile trading is a disorderly business.

Technological advances and time and motion study techniques in developed countries create reduction in labour requirements and at the same time require new expanding market outlets to absorb the resultant productivity increase. Equally the improvement of socially acceptable living conditions in Third World and developing countries requires export markets at realistic prices.

Statistics comparing 1950 to 1978 employment and imports are, therefore, useless, as it is a different ball game. If the EEC import regime negotiated within the framework of the Multi-Fibre Agreement is used quite positively to create a stable trading environment for the Community's textile and clothing industry, it should place equal emphasis on exports if stability is ever to be achieved. Total trade expansion is a necessary element of trade development.

Microprocessors and employment

From Mr. S. Gibbs

Sir.—Discussion of the possible effects of microprocessors on manufacturing industry has ranged between extremes of view, one assertion being that such technology, inherently labour saving, could mean massive redundancy in both white and blue collar sectors. The contrary view is that unemployment is certain to increase if in the UK micro-electronic technology is not developed as quickly as in competitors' countries.

In the present climate and against the present background of increasing unemployment, both fears are understandable but unnecessary, I suggest. Our present national work force (and thus unemployment) is inflated by the inclusion of families where both parents are employed. In some cases this is by choice but in most it is the result of financial necessity. Surely we should grasp at the new technology as a means of improving productivity, reducing unit cost and thereby improving profitability. In this way, individual rewards can be increased to a level that eliminates the need for "two parent" working with a consequent restoration of the home with a parental presence and thus an improvement in the quality of family life.

In this way, microprocessing can improve the life of our society as a whole and not become the "bogey" of the 20th century.

S. Gibbs.
Pumphouse Lane, Hanbury,
Near Droitwich, Worcestershire.

Liberals in Europe

From the Liberal Prospective Parliamentary Candidate for Mid-Sussex

Sir, It is disappointing to find E. J. Goodman (February 14) hidebound by the results at Westminster in her assessment of the possible outcome of the elections in the UK to the EEC Parliament. It is equally disappointing that an article featured as "Where Britain's Parties Stand" contains not one reference to the leading European party in this country—the Liberals.

With the strength of Liberals throughout Europe, the union which they have formed and the joint manifesto which they have adopted, Liberals, together with Social Democrats and Christian Democrats, form the largest Parties in Europe.

Conservatives, despite a desperate search for allies, have been rejected by other parties in Europe as the Right Wing and too authoritarian and will be an isolated minority party ranking in size with Communists and with no say in decision making. The old Tory cry of

The national heritage

From Mr. Dr. Dalton

Sir.—Dr. Dalton, the Labour Chancellor who created the National Land Fund in 1946, then described the almost complete failure to make use of the "in lieu of tax" provision since it had been enacted in 1910 as "playing the fool with a great idea." How much more justified is this stricture today, when it is seriously proposed—in the White Paper on "A National Heritage Fund"—to abrogate this constructive concept at the very moment when it is most desperately needed!

Instead of following the principle, in approved cases, of acceptance of payment of capital tax in kind instead of in cash (as the French find no difficulty in doing), the Treasury now insists on its pound of flesh of hard cash, which it would obtain whenever an assortment of bodies haggling about priorities and percentages are able (and agree) to disgorge it for the use of a tax debtor.

The proposed new National Heritage Fund will very evidently be rendered ineffective if it is charged, over and above all its other responsibilities, with the colossal burden of financing the acquisition of works of art which could in fact simply be taken into public possession—according to the phrase in the present statutory provisions—"in satisfaction of tax." All that would be necessary would be the adoption of some routine accounting device in Treasury ledgers, similar to that employed under the French system.

By way of illustrating in the most general terms the scale of overhauling which could be imposed on the projected new Heritage Fund, I would point out that on January 1 of this year loans from private sources to national institutions in the United Kingdom were indemnified for £72.75m.

It should be added that replacement of acceptance in lieu by sale to a museum by private treaty, as proposed by the White Paper, would introduce an element of unpredictability in working out testamentary dispositions which can

Dead birds at Sullom Voe

From the Director, The Royal Society for the Protection of Birds

Sir.—There is ample justification for criticism of the handling of the oil spill at Sullom Voe—Europe's largest and most modern oil port (Læsby Able, February 9).

Because of the quite exceptional international importance of Shetland's waters as a seabird breeding and wintering area, my society was deeply concerned that the highest standards of oil pollution prevention, treatment and monitoring should be provided there. We received complacent assurances from the industry and its "environmental advisers" who appeared unwilling to acknowledge the realities of the problems they would face. Only the professional staff of Shetland Island Council's Ports and Harbours Department seemed fully aware of the true situation.

The limitations of oil spill cleanup are enormous. Depending on oil type and sea conditions, the best treatment rates that can be achieved will clear up to 15 tons per hour for each vessel involved. During darkness—which lasts for about 18 hours in a Shetland January—work must be suspended. Many oils will not respond to treatment anyway: fuel oils and some crudes cannot be dispersed and are so viscous, especially in cold northern seas, that no existing mechanical skimmer can cope with them. Nor—as this incident proves—can booms be relied on for containment. It is perhaps significant that in many major oil companies, the planned response to pollution incidents is controlled by public relations men. Certainly it is the case that often little can be done but to try to talk one's way out of it.

Unfortunately, there is no satisfaction in saying "we told you so." Ezzo Bernicia's fuel oil has killed at least 3,040 birds. This figure includes 112 great northern divers, one of Europe's rarest breeding species. Seafowl were literally wiped out over many square kilometres of sea. At least 20 otters and hundreds of sheep—which eat seaweed on the shores—have also been affected.

Unquestionably, whatever safeguards are applied, there will always be oil spills here and elsewhere. It is essential for Government to commit itself to a major new programme of research and development on clean-up techniques. The Department of Industry's oil pollution unit must be expanded and restructured. The oil and shipping industries should be obliged to contribute substantially to this process, which clearly cannot continue to be left largely in their hands.

Jan Prest.
RSPB.
The Lodge,
Sandi, Beds.

Today's Events

UK: Four Times employees claim unfair dismissal at Industrial Tribunal, Ebury Bridge Road, London.

Mr. Zivan Berisavljevic, Yugoslav Ambassador, opens a trade promotion event at Birmingham Chamber of Commerce.

Energy Show opens at National Exhibition Centre, Birmingham (until February 25).

Photography at Work Exhibition opens at Wembley Conference Centre (until February 22). Kendall and Dent, London silver bank, High Court hearing resumes on removal of Official Receiver as company's provisional liquidator.

Sir Kenneth Cork, Lord Mayor of London, receives Mayor of Freetown, Sierra Leone, Dr. June B. Holt-Rouss, and Town Clerk of Freetown, Mr. E. N. Ferguson, at Mansion House.

Prof. D. Jenkins, Leeds University, speaks on the nature of work in a changing society, Derby Cathedral.

Launch of Ross McWhirter Foundation/Carton Publications Young Citizens Awards at Gloucester Hotel, London—speakers include Mr. Angus Ogilvy and Sir Douglas Bader. Overseas: EEC Finance Ministers and EEC Fisheries

Council meet in Brussels. Herr Wilhelm Haferkamp, EEC External Affairs Commissioner, starts a visit to Tokyo to discuss reduction of Japan's trade surplus with EEC.

Indian parliamentary session opens in New Delhi. Department of Industry publishes the turnover of the motor trades (fourth-quarter). Preliminary estimate of gross domestic product based on output data (fourth-quarter).

PARLIAMENTARY BUSINESS House of Commons: Debate on the first Report from the Procedure Committee, session 1977-78, with 1st to 8th Reports 1976-77. House of Lords: Greater Manchester Bill, Isle of Wight Bill, South Yorkshire Bill, Tyne and Wear Bill, Kirkbath Independence Bill, Nurses, Midwives and Health Visitors Bill, Second Readings. Select Committee: Statutory Instruments, Room 5, 4.15 pm. COMPANY RESULTS First dividends: Drake and Scull Holdings, English and Scottish Investors, Interim dividends: Consolidated Plantations, Footwear Industrial Investments, Sime Darby Holdings. COMPANY MEETINGS See Financial Diary on page 7.

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1977 June Rolls-Royce Silver Shadow II Saloon. Caribbean Blue, Dark Blue leather. Speedometer reading 10,000 miles.
1978 Aug. Rolls-Royce Silver Shadow Saloon. Walnut, Beige leather. Speedometer reading 18,500 miles.
1978 Aug. Rolls-Royce Silver Shadow Saloon. Willow Gold, Black Everflex roof, Black leather. Speedometer reading 20,000 miles.
1971 Aug. Rolls-Royce Silver Shadow. Caribbean Blue, Black Everflex roof, Dark Blue leather. Speedometer reading 62,000 miles.
1971 Oct. Rolls-Royce Silver Shadow. Seychelles Blue, Black Everflex roof, Dark Blue leather. Speedometer reading 65,500 miles.

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1978 450 SL. Met. Silver Green, 3,000 m. miles, Service history. Many extras. £21,995
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ROVER

1977 350i 3500. 18,000 m. miles. £4,995

SCIMITAR

1978 (1) Met. Brown. 49,000 m. miles. £4,995

ROLLS-ROYCE SILVER SHADOW II

1979 (1) (will be registered in March). £31,000.

LANCIA

1978 1600. 2000. 2,500 m. miles. £4,300.

JAGUAR

1974 Model 4.2. 37,000 m. miles. £23,995

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ENGINEERING—Continued

Feb.	B'gram Pallet 20p	82	15.1	6.25	2.0	11.
Dec.	Blackw'd Horizon	50	30.70	62.26	4.4	5.

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TINS				
Nov	Dec	Jan	Mar	Apr
79	189	281	1	34

Apr.	Oct.	Apr. Hiram \$M1.	400	210	Q300.	0.5	0
Apr.	Oct.	Berath Tin	300	210	Q300.	0.5	0
Apr.	Oct.	Gold	300	210	Q300.	0.5	0
Feb.	Oct.	Gold	115	21	H557	5.8	0
		Gold & Base 12lb.	300	210	Q300.	0.5	0
May	Dec.	Hoping Conn.	340	112.5			
June	Nov.	Meris 10lb.	210	21.0			
		Jan. 12lb.	210	21.0			
		Jan. 12lb.	210	21.0			
Jan.	July.	Thirteenth \$M1.	25	21	H025.	2.1	0
		Male dressing \$M1	425	45			
Mar.	Sept.	Perkins 10lb.	45	21			
Mar.	Sept.	Petalum 10lb.	210	21.0			
Jan.	Feb.	Perkins 10lb.	210	21.0			
Jan.	Feb.	South Crutty 10lb.	210	21.0			
Jan.	Jan.	South Crutty \$M1.	185	21	H045.	5.3	0
Jan.	Jan.	South Crutty \$M1.	185	21	H045.	5.3	0
Jan.	Jan.	South Crutty \$M1.	185	21	H045.	5.3	0
May	Nov.	Tanjo 15lb.	100	21			

COPPER

		ABH12M15MISCELLANEOUS			
		Baryum	68		
		Burns Mines 170c	11 1/2	575	
Aug.	Feb.	Cons. Miners 10c	285	31	
	November	Northeast CS1	405	98 1/2	
Jan.	July	R.T.Z.	276	30 1/2	9.5
		Sabing Inds. CS1	57		
		Tara Exmt. 51	843		

GOLDS EX-\$ PREMIUM

Surveying including the Westwood tower premium, these prices available only to non-UK residents.							
Feb.	Aug.	Buys	Duffels R1	5120	21	0190c	0
Aug.	Feb.	East Drive R1	5100	21	0215c	0	
Aug.	Feb.	East Rand Prg. R1	4100	21	010c	0	
Aug.	Dec.	F. S. Geduld 50c	5234	30.19	0315c	2.4	
June	Dec.	Frans. Brand 50c	5234	30.19	030c	2.4	
July	Aug.	Helena R1	5234	21	0190c	1.2	
Aug.	Feb.	Stikfontein 50c	5234	21	06c	2.3	
Aug.	Feb.	Vaal Reef 50c	523	21	0290c	0	
Feb.	Aug.	West Drive R1	5230	21	0385c	1.7	
June	Dec.	West Hidge. 50c	5230	25	0415c	1.4	
Feb.	Aug.	Western Deep R1	5114	29.1	0470c	1.6	

NOTES

Unless otherwise indicated, prices and net dividends are in pence and denominated in 25p. Estimated price/earnings ratios covers are based on latest annual reports and accounts and, where available, are updated on half-yearly figures. P/E's are calculated on the basis of net distribution; bracketed figures indicate 10

cost, or more difference if calculated on "nil" distribution. Costs are based on "maximum" distribution. Yields are based on mid-prices, are gross, adjusted to ACT of 33 per cent. and allow value of declared distributions and rights. Securities

- ▲ Sterling denominated securities which include investment & premium.
- "Top" Stock.
- Highs and Lows marked thus have been adjusted to allow for interest for cash.
- † Interim since increased or resumed.
- ‡ Interim since reduced, passed or deferred.

** Tax-free to non-residents on application.
 * Figures or report awaited.
 †† Unlisted security.
 @ Price at time of suspension.
 @ Indicated dividend after pending split and/or rights issue.

- 1. Same interim: reduced final and/or reduced earnings indicated.
- 2. Forecast dividend; cover an earnings updated by latest interim statement.
- 3. Cover allows for conversion of shares not new rankings for dividend.

* Cover does not allow for shares which may also rank for dividend at a future date. No P/E ratio usually provided.

* Regional prices.
 * No par value.
 * Tax free. * Figures based on prospectus or other official estimate. c Costs. d Dividend rate paid or payable on particular capital; cover based on dividend on full capital. e Redemption yield. f Flat yield. g Assumed dividend and yield. h Assumed dividend yield after scrip issue. i Payment from capital sources. j Keep further highest rate nearest retail. k Share issue

q Earnings based on preliminary figures. s Dividend and yield exclude
a special payment. t Indicated dividend: cover relates to previous
dividend. P/E ratio based on latest annual earnings. u Forerunner
dividend: cover based on previous year's earnings. v Tax free up to

30p in the £. **F** Yield allows for currency clause. **G** Dividend and yield based on merger terms. **H** Dividend and yield include a special payment. **I** Cover does not apply to special payment. **J** Net dividend and yield. **K** Preference dividend passed or deferred. **L** Canadian. **E** Issue price. **M** Dividend and yield based on prospectus or other official estimates. **N** 1979-80. **O** Assumed dividend and yield after pending scrip and rights issue. **P** Dividend and yield based on prospectus or other official estimates.

estimate; for 1978-79. R Figures based on prospectus or other official estimates for 1978. M Dividend and yield based on prospectus or other official estimates for 1978. N Dividend and yield based on prospectus or other official estimates for 1979. P Figures based on prospectus or other official estimates for 1978-79. Q Gross. T Flow

assumed. 2. Dividend total to date, $\frac{1}{2}$ Yield based on assumed Treasury Bill Rate stay unchanged until maturity of stock.

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REGIONAL MARKETS

The following is a selection of London quotations of shares previously listed only in regional markets. Prices of Irish issues, most of which

not officially listed	In London, are	as quoted on the Irish exchange	
Albany Inv. 20p	26	Sheffield Brick	51
Ash Spinning	106	Sheff. Refractories	70
Bertam	20	Sindal (Wm.)	120
Bdg. & Intr. Est. 50p	324		
Claver Croft	28		
Craig & Rose	615		
		IRISH	
		Conv. 9% '80/82	£88d

Dyson (R. A.) A.	37	Amance Gas	108
Ellis & McHoy	68	Arnott	395
Evered	26	Carroll (P.J.)	99	+7
File Forge	52-	Clondakin	93	-2
Fintav Pkg. 50	21	Concrete Prod.	135

Grang Ship. Co.	122	Melton (Hdgs.)	604
Higgins Brew.	70	Ins. Corp.	262
Holm Lbrs. Co.	252	Irish Ropes	98
I. O. N. S. Co.	232	Jacob	50
Peace (C. N. I.)	202	+2 T. M. G.	185
Peel Mills	24	Unkare	88

OPTIONS

3-Month Call Rates			
Industrials			
A. Brew	6 1/2	I.C.I.	20
B.O.C. Int'l.	6	"Imps"	6
B.S.R.	8	I.C.I.	40
Babcock	11	Imperial	7
		KCA	3
		Unilever	3
		U.D.T.	4
		Utd. Drapery	7
		Vickers	1
		Woolworths	5

Berclays Bank	25	Ladbroke	14	Property	
Beecham	32	Legal & Gen.	14		
Blue Circle	18	Lex Service	7	Brit. Land	3
Boots	15	Lloyds Bank	22	Cap. Counties	4

Bowaters	14	Lucas	4	E.P.	3
B.A.T.	24	London Brick	6	InterEuropean	5
Brown (J.)	33	Loarbo	5	Land Secs.	1
Barton "A"	16	Lucas Inds.	25	MEPC	2
Cardburys	5	"Mains"	7	Pensley	8
Courtaulds	10	Mills & Spino	12	Samuel Progs.	9
Debenhams	8	Midland Bank	25	Town & City	1
Ditfitters	15	N.E.I.	12		

Dunlop	5	Mat. West. Bank.	22	Oil
Eagle Star	10	Do. Warrants	10	
E. M. I.	14	P & O Ltd.	7	Brit. Petroleum
Gen. Accidents	17	Plessey	8	Burmah Oil

Gen. Elect. Co.	28	R. H. M.	3	Chaffin	2	
Elavco	40	Plant Org.	18	Shell	2	
Grand Met.	71	Reed Indl.	12	Ultramar	1	
G. U. S. 'A'	20	Spillers	32			
Guardian	18	Tesco	4	Mines		
G. N.	22	Thorn	22	Charter Cons.	1	
Hawker Sid.	20	Trust Houses	37	Cons. Coal	1	
House of Fraser	12	Tube Indl.	5	Ben. I. Zinc	1	
